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An Address
ON THE
PRESENT POSITION OF THE VOLUNTARY HOSPITALS.

A Paper read before St. Mary's Hospital Medical Society on Oct. 19th, 1927,

BY E. GRAHAM LITTLE, M.D., F.R.C.P. LOND., M.P.,
DERMATOLOGICAL PHYSICIAN TO ST. MARY'S HOSPITAL.

SINCE I gave this title for a paper to your Society in the early part of the summer much has been written upon the subject, and a strong general interest has been aroused anew in this question. I have been further stimulated by a recent attack upon the voluntary hospitals by Prof. Hey Groves, of Bristol, with which I shall deal later.

REPORTS OF PARLIAMENTARY COMMITTEES.

During the past few years Parliament has taken a strong interest in the position of the voluntary hospitals, and two Parliamentary bodies have actually investigated and reported upon that position. The first was the Voluntary Hospitals Committee, appointed on Jan. 25th, 1921, by Dr. Addison, when he was Minister of Health, "to consider the present financial position of voluntary hospitals and to make recommendations as to any action which should be taken to assist them." That Committee issued an interim report in March, 1921, which dealt mainly with one suggestion. The Committee was very obviously influenced by the knowledge that the valuation of approved societies under the National Health Insurance Acts showed an enormous accumulated surplus over the amounts required for the purposes of the Acts. The Committee were "strongly of the opinion that in the interests both of the hospitals and of these societies a substantial part of the disposable surplus should be applied to providing a contribution towards the cost of maintenance of members in hospitals." These friendly societies have built up their accumulated funds very largely by the disinterested help of medical men, the health benefits having been secured in great measure by the watchful care exercised by the medical officers to these societies, and there is widespread feeling that some of this accumulated wealth should return indirectly to the interests served by doctors. The payments to hospitals by patients, initiated in this way, have been greatly extended, a subject upon which I shall have something to say later.

The Committee made a final report in May, 1921, the first recommendation being that a central body should be set up for Great Britain on the lines of the University Grants Committee, which should bear the name of the "Voluntary Hospitals Commission," under the Ministry of Health. Inasmuch as there was already an existent organisation for London in the King Edward's Hospital Fund, the Hospitals Commission dealt only with institutions outside London. That Commission is still in existence. Another innovation of far-reaching importance has come about as the result of the recommendations of the Voluntary Hospitals Committee in 1921—namely, the setting up of local committees outside London, in each county, county borough, or other selected area. These local committees have been of singular service in stimulating general interest in the hospitals in each area; the reports published by one of these local committees, that for the city of Manchester, may be regarded as the model for all others to imitate. Indeed, the work of these committees throughout the country probably accounts in no small measure for the marvellous recovery which the provincial hospitals have made towards financial stability, as I shall mention later. The committee of 1921 took a large volume of evidence from experts in hospital management, both lay and medical. Their conclusions in favour of maintaining the voluntary system are set out, I think with admirable cogency, on p. 8 of the final report (Cmd. 1335).

Like the preceding Voluntary Hospitals Committee, the Voluntary Hospitals Commission in their turn expressed themselves in favour of the continuation of the voluntary system. They declared in 1923 that "the voluntary system possesses strong vitality," and that "its chances of permanent survival are increasingly hopeful." They emphasise the fact that "the whole object of the Commission is to maintain with all the means at their command the voluntary system intact" (p. 15, Interim Report, 1923). The Commission had the important duty of distributing amongst the hospitals the special Parliamentary grant of half a million sterling, distribution having been completed by March 31st, 1924. The necessities for this grant arose largely from special conditions; the after-effects of the war were imposing an intolerable strain upon the voluntary system, and the grants made by the Commission were intended to meet this exceptional strain. Since that date the financial position of the voluntary hospitals has steadily improved. The annual reports for 1923, 1924, and 1925, issued by the Joint Council of the Order of St. John and the British Red Cross Society, are compilations of the utmost value for forming an estimate of the hospitals dealt with. These are exclusive of the area covered by King Edward's Hospital Fund for London, the reports of which should be consulted independently. The position of the provincial voluntary hospitals detailed in the report for 1925 (issued in October, 1926, the last available) showed that more than 75 per cent. of the number examined, some 750, showed a credit balance in their maintenance account, and their invested funds had increased by a sum of six million sterling in the financial period 1920–25. This achievement is notwithstanding the fact that there was an increase in 1925 over 1924 of 40,000 in-patients and 150,000 out-patients. "This wonderful record," says Sir Arthur Stanley, the Chairman of the Joint Council, "shows the great increase of confidence on the part of the general public in the treatment they receive when they enter the hospitals." The position in the provinces is rather better than that in London, 59 per cent. only of London hospitals showing a surplus for the year of general fund income over general fund expenditure. It is interesting to note, further, that the hospitals with medical schools attached (and there are 14 such provincial hospitals) show a very slightly larger cost than the hospitals without such schools, the principal difference being caused by the larger salaries and wages paid at the medical school hospitals. Those who wish to investigate these very interesting figures in detail are referred to p. 49 of the report of the Voluntary Hospitals Commission for 1925. The examination of a few items shows how closely expenditure has been regulated:—

	Medical school hospitals.	Non-medical school hospitals.
Provisions..	35·5	35·1
Surgery and dispensary..	29·9	23·2
Domestic	31·1	29·2
Salaries and wages ..	64·0	57·8

Perhaps some detailed figures will best convey the exact position at present. The average cost of a bed in 1913 was £100 a year; the average cost in 1925 was £200 a year. This present cost is met as follows: £36 from patients, £12 from public authorities, £59 from interest, dividends, &c.; the balance, constituting nearly half of the cost, is derived from voluntary gifts.

For the London area the authority which discharges the same functions as the Voluntary Hospitals Commission in the provinces is the King Edward's Hospital Fund for London, whose headquarters are 7, Walbrook, E.C. 4. This was founded in 1897 as a memorial of the sixtieth anniversary of the Queen's reign, Prince

Albert Edward of Wales being the President. It is now consequently celebrating its thirtieth anniversary, and a splendid meeting was held on Oct. 18th, 1927, of the King's Fund in combination with the League of Mercy, at which the Prince of Wales made a notable speech, rightly insisting upon the importance of propaganda in making the needs and the services of the hospitals as widely known as possible. He was able to announce that the sum distributed last year to the hospitals was nearly £40,000 more than the year before, and that gifts amounting to £25,000 had been received to celebrate the thirtieth anniversary. The purpose and activities of the Fund are thus set out; it does not assist at present in the foundation of new institutions except in cases where new populations have grown up since the date of the foundation of the Fund, nor does it entertain applications from institutions which have not been in existence in a properly constituted form for a period of at least three years. Its operations are confined to hospitals within 11 miles of St. Paul's. It has distributed since its foundation over five and a half million sterling. Its annual revenue for disposition at its discretion amounts to about a quarter of a million. During 1925, the last year under review, nearly three-quarters of a million was subscribed for building schemes as apart from maintenance. As is so fortunately the case with everything to do with the voluntary hospitals system, the administration of the Fund has attracted some of the best men in the profession to its service. The Fund has exerted the most beneficial effect upon all the activities of the London hospitals. Under the presidency of the Prince of Wales it is ever increasing its usefulness. The following is an extract from the speech which he made in July, 1924. He said:—

"I wonder if there is anyone who still thinks the voluntary hospital system is dead, or dying. If so, let him look at the facts and figures before us to-day. Even in 1920, when the crisis was at its worst, the hospitals of London had an income of £2,400,000, as against £1,500,000 before the war. Since 1920 their income has increased to £2,850,000 without counting any of the £400,000 raised by the Combined Appeal; £990,000 has been added to their endowments; and £1,100,000 has been received for extensions and improvements. This means that, over and above their annual income, which last year was nearly twice what it was before the war, the voluntary hospitals, in London alone, have received in three years two and a half millions for special purposes. And this does not include the additions, during this same period, to the investments of the King's Fund itself. Then, again, there are 1600 more beds than there were before the war, and the extension schemes now in hand, or proposed, would add another 1000. This is not decay or death; it is life—and very vigorous life. More than that, it is growth. The hospitals are not satisfied with merely making both ends meet—difficult as that seemed a short while ago. They are constantly expanding in response to the ever-growing need for better equipment and more beds. . . . Income of all kinds, voluntary contributions, patients' payments, and workmen's collections, the ordinary distribution of the King's Fund, all are increasing."

He was able to speak of two legacies which had increased the income of the Fund by £40,000 a year, and of still another legacy amounting to £200,000, which could be applied at the absolute discretion of the Fund. In 1926, again, the Prince was able to report that during that year some 1200 additional beds had been provided, 144 of which were earmarked for accident cases, a provision which represents an attempt to cope with the modern scourge of injuries from motor traffic. "This favourable position," the *Times* remarked in a leading article commenting upon this speech, "however, can remain favourable only if the generosity of the public keeps pace with the zeal of physicians, surgeons and nurses, research workers, and administrators."

The expenditure for 1925 of 143 hospitals, representing roughly 12,000 occupied beds, was somewhat more than three million sterling; the amount distributed by King Edward's Fund in the same year was just a quarter of a million. It will be interesting to read the report for the past year, which should appear in the press this week.

NEW SCHEMES.

The wise foresight of the administrators of the Fund is further exemplified by two new schemes which are under consideration at the present time.

1. A pension scheme for nurses and hospital officers has made great headway already, and has been adopted by 86 hospitals out of 143.

2. A still more recent proposition has to do with the provision of paying beds at the hospitals, and a committee presided over by Lord Hambledon, with Sir John Bradford and our senior surgeon, Mr. Warren Low, as his medical colleagues, is thrashing out this matter.

One very beneficent reform instituted by the Fund was the scheme for a uniform system of hospital accounts. This scheme, established about four years ago, has been several times revised to meet changing conditions, and its acceptance is a condition of grants from the King's Fund, from the Sunday Fund, and the Saturday Fund, as well as by the Hospital Commission which deals with the provincial hospitals. By its experienced and sympathetic supervision economy in the management of hospitals has been encouraged, more especially through the publication by the King's Fund of an annual statistical report showing the cost of working at different hospitals, and it is pleasant to note that our own hospital is one of the most economically conducted of the group.

Not the least of the services of the Fund has been its function in arousing interest in the hospitals amongst the working-class population through the establishment of the Hospital Saving Association, which in its last report, 1926, showed an income of £150,000 a year. What is of even more importance than the money subscribed is the intimate affection awakened in the hospital-patient class by a wider knowledge of hospital problems looked at from their own point of view. The affection with which the class most helped by the hospitals regards the voluntary system was singularly demonstrated in the course of an appeal conducted in 1922 on behalf of the voluntary hospitals by the Educational Auxiliary Committee. Delegates were appointed from various educational bodies to serve upon this committee, and I was the representative of London University and had the good fortune to be appointed chairman of the Teaching Hospitals Subcommittee of that appeal. It was a poignant satisfaction to me as a hospital physician to note during the course of these investigations how deeply based was the confidence in the hospitals among all classes of the community, and very especially amongst the poorest of our people. If the poor could have their way there is little doubt indeed of the survival of the voluntary system.

The voluntary hospital is built upon humanity, and the human interest is what keeps it the fresh and lovely thing it is. All of its component elements give of their best, freely and without reward. A great Admiralty lawyer, whom I knew well, found time from his busy practice to spend not less than two afternoons a week in the service of the hospital upon the board of which he was a member. The keynote of the whole system is voluntary service, which becomes a passion to those who give it. That evasive thing atmosphere emanates from these individual acts; medical staff, nurses, lay workers, students, all become imbued with the same ideal. An esprit de corps crystallises out which breeds an intense patriotism, narrow if you like, but very potent for good. Let me give you an instance. A medical school just failed to become inscribed as a unit school, and was left consequently without the Government grant accorded to unit schools. The medical staff met this position with true British resourcefulness. They doubled their service to the hospital, they formed a unit conducted without pay. They had their reward in a school so flourishing as to compete quite successfully with the unit schools. Naturally such an effort demanded

sacrifice, and the most brilliant member of the staff, it was currently known, died from overwork at a comparatively early age. Would such an effort have been forthcoming under the ægis of a Government department? I think not.

The teaching hospitals are the flower of the whole voluntary-hospital system of this country, and the second great purpose served by hospitals, the education of students and nurses, would certainly suffer an unhappy change under State-aided control. They have for the past 200 years attracted to their medical service the ablest men and women in the profession. By the character of these workers and not by the surroundings in which they work, the teaching hospitals have become the great outposts of scientific advances in medicine and surgery, which within the present generation of men have so largely transformed the lives of all of us.

LISTER'S EXAMPLE.

A few months ago celebrations, world-wide in their extent, marked the centenary anniversary of the birth of Joseph Lister. Those of us who are old enough to remember, however faintly, the conditions which prevailed in our hospitals, even the most advanced of them, before the epoch-making discovery of Lister, can best gauge the beneficent revolution which he effected. Lister received his early training in London schools of medicine and ended his long and honoured life as a member of the staff of one of them. To-day, if there is no genius comparable to Lister, and where indeed can we hope to find his equal, there is a thousandfold greater army of research workers than was possible in his day. New methods of science have received an immense stimulus from his invention and from his example, and have provided far more precise means of investigation than ever before, in which our teaching hospitals have throughout taken the leading part, so that nowadays we have progressed far beyond the conceptions which prevailed at the end of the last century, when the medical schools were looked upon as little more than incumbrances to the hospitals and when voluntary subscriptions were often jealously safeguarded from any possibility of being used in the promotion of medical teaching or research. Besides acting as an ever-open asylum for the sick poor, the teaching hospitals have thus become the greatest schools in the world for the advancement of medical science.

The estimation in which the teaching hospital is held is, in fact, best demonstrated by the ambition and desire of the Poor-law infirmaries to imitate it as closely as possible, and their highest pride is to become affiliated to one or other of the voluntary institutions. We at St. Mary's have been fortunate in coming to a working arrangement with the Paddington Infirmary, with mutual benefit to both institutions. The fusion of these two distinct services, the Poor-law infirmary and the teaching hospital into one whole, would, I feel certain, be a retrograde step, for their objects are different; but it is, on the other hand, an unfortunate fact that the infirmaries have not been sufficiently made use of for the purpose of teaching, and an extension of the experiment which we have tried at St. Mary's of a loosely knit connexion between hospital and infirmary should be widely repeated.

INCREASING DEMAND ON THE VOLUNTARY HOSPITALS.

The very excellence of the treatment now obtainable at voluntary hospitals has been to some extent their own undoing; the waiting-lists for admission to these institutions are getting ever larger, whereas numerous beds are permanently empty at the Poor-law hospitals. A class is clamouring for treatment in voluntary hospitals which was never willing previously to consider such treatment as a possibility, and the necessity to meet the demands of the middle class for hospital service has become very insistent. Our own hospital, with its ready adaptation to calls upon it, is considering very carefully the problem of providing paying beds. There are two views held as to the propriety of setting apart part of the accommodation at voluntary hospitals founded for the relief of the sick poor for the reception of patients who cannot wholly deserve this appellation. The experiment has been in operation for some years at some other hospitals.

THE MIDDLE CLASSES AND MEDICAL TREATMENT.

It has always been something of an anomaly that the best medical attention in this country under present conditions can be obtained only by two classes, the rich and the poor, and both classes are attended by practically the same medical advisers. A member of the staff of a great hospital practically divides his day between these two classes; half of his time will be spent in tending the sick poor, for which he gets paid nothing, and the other half in gleaning from the rich the means which enable him to devote himself to his profession and at the same time to succour the poor without fee. But the middle class remains outside of this system altogether. The conditions of modern medicine, which necessarily entail team work—that is to say, the examination of the patient by numerous specialists—deprive the middle-class patient, as a rule, of the full benefits of proper examination, and consequently of proper treatment. Upon the middle class lies nearly the whole financial burden of our country, and it is, in my opinion, high time that some provision was made for their proper medical treatment. The rich have perhaps not fully recognised the part which the voluntary hospitals in reality play in providing themselves with the first-rate medical advisers which their money can command, for these advisers win their experience and their skill by their work at the voluntary hospitals. A wider extension of hospital propaganda would probably secure consideration from this class which is best able to give. What can be done by generous donations may be exemplified in the splendid Wells bequest, administered by the King's Fund, which was almost wholly responsible for the additional 1200 beds to which I have drawn attention. It might perhaps be usefully pointed out to wealthy donors that the Chancellor of the Exchequer, incredible as it may sound, actually makes a concession to hospital subscribers who promise an annual donation for at least seven years; the amount of these subscriptions may be deducted from income-tax returns and, perhaps a still more important fact, from the super tax which is so especially aimed at the very rich.

Indeed, propaganda is one of the most urgent necessities of the position, and if praiseworthy needs are explained to the public, the public quite astonishingly generously responds. Our own hospital has obtained by an appeal privately conducted the large sum of £40,000 within a few months, and the cost of collecting this very considerable amount has been less than 2*d.* in the £. St. Bartholomew's Hospital is building a great new surgical block, money for which appears to be forthcoming without difficulty. Under the voluntary system the expenditure of the money received is probably more economical and more sensibly guided than under any other system. Again, the spur of competition in wise management comes into play, and donors may be completely confident that the money they give will be spent in the very best possible way for the relief of suffering, the promotion of medical science, and the immense amelioration of the health and comfort of the whole country.

BUREAUCRATIC IDEALS.

In a State so impoverished as ours at the present time the purposes for which money is used become of primary importance. The bureaucrat spending other people's money is proverbially lavish; too often he is obsessed with megalomania, and bricks and mortar are his fetish. Prof. Hey Groves, who seems imbued with bureaucratic ideals, clamours for "hospitals of a thousand beds," supported by the rates, but money spent upon buildings must be subtracted from money spent upon the more vital needs of the time, medical research and improved methods of treatment, and the value of a laboratory, to take a single example, is not necessarily dependent upon the magnificence of its

installation. Leonard Hill once made a very telling reply to a University administrator who was condemning a certain famous laboratory for its scanty accommodation and equipment. Helmholtz, he said, had made his epoch-creating discoveries in crystallisation by working out the conformation of crystals with models made with his own hands out of wires and corks. Here, as always, it is the spirit that counts and not the material with which that spirit works. It is better to have A1 workers in C3 laboratories than C3 workers in A1 laboratories; the man is more important than the aids which he uses. Public departments are apt to pamper the official and to starve the scientific worker. In Budapest, which I visited in 1913, the medical clinics were entirely financed by the Government. I saw a magnificent building provided for the dermatological department; but the scientific workers in it were receiving salaries which could only be described as pitiable—e.g., the chef-de-service, a first-class medical histologist, after 18 years' service was getting less than £200 a year. One of the first results, therefore, of change of control of the hospitals would be to magnify out of all proportion the material as against the man, and inasmuch as there is no large margin of money available, real research would inevitably be sacrificed to the provision of bricks and mortar and the multiplication of paid Government officials.

It is to be borne in mind by all concerned that the alternative to the voluntary system is exactly this bureaucratic control which would necessarily be many times more expensive. Prof. Hey Groves shares the innocent delusion of the Socialist in our midst, that "somebody else" would always supply the money. He writes: "If the profession stood four-square and told the country that our voluntary hospital system was essentially bad, then the money would be forthcoming just as readily as it was for education or the National Insurance scheme." He forgets, however, to ask who pays for these expensive provisions. The "country" is nothing but the ratepayers—i.e., "ourselves of the middle classes"—and a further addition to the crushing rates now almost entirely borne by those classes might quite conceivably bring our whole body politic crashing down. Mr. Brock, the Secretary of the Voluntary Hospitals Commission, acutely points out that nearly the whole burden of the voluntary hospitals is borne by the middle classes, those classes who have the least direct benefit from the hospitals, and that a subtle change has been overtaking us in that, with the immense extension of insurance benefits that every political party has practised within the last few years, the "necessitous poor" have been largely eliminated; the burden of that elimination again has been mainly borne by the middle classes, but there are not wanting signs that those "patient oxen" are reaching the end of their tolerance of these conditions.

PAYING BEDS.

The provision of paying beds at the hospitals serves a twofold purpose. (1) It goes some way towards meeting the changed condition of the middle classes who are taxed almost out of existence and who alone of our community do not in fact obtain the best medical aid although they are the chief means of providing it for others. For the average middle-class man a major operation for an acute illness is a financial disaster from which it may take him years to recover. Nowadays it is expensive to be born and often not less expensive to die, but a prolonged recovery is more costly still. These conditions have come about from the change in medical practice; it is no longer possible for one man to deal faithfully with any but the simplest medical cases, and the provision of many experts is necessarily expensive. (2) It is not proposed to make a profit out of these beds, but they do pay all expenses, both of building and of medical service. If and when the voluntary contributions to a hospital allow of its doing so, these beds could revert to the poorer classes again and new provision be made for paying beds if the need should still exist.

While it is true, as the objectors to the voluntary system emphasise, that the hospitals are now solvent partly because contributions are asked for from nearly all who use them except the very poor, it must be remembered that the control of the hospitals rests with the voluntary staff. Under the State-controlled system conditions would be entirely different, and the management would pass into the hands of bureaucratic officials who would be tied up in regulations and red tape, and would not have the knowledge to deal with the problems of sickness that the present administrators so abundantly possess.

THE HOSPITALS AND MEDICAL EDUCATION.

I must dwell a little more upon the aspect which is of most direct interest perhaps to the present audience—namely, the part played by the teaching hospitals in medical education, both of doctors and nurses. Let us take the last point first. In my student days the sisters and nurses were largely drawn from the upper domestic-servant class. They were often very worthy women for routine work, but their lack of education and intelligence hampered the doctor at every turn. We owe it to the voluntary hospitals that Sarey Gamp has been finally dispossessed by Florence Nightingale!

The part played by the hospitals in advancing medical knowledge is little appreciated by the public. Any medical discovery made by a medical man is regarded as a matter of course. The epoch-making inventions of anæsthesia and of antiseptic surgery, which had their origin at teaching hospitals, have changed the whole face of medicine and of surgery in one generation. These discoveries stand out, but there is an enormous imperceptible movement forwards of medical knowledge as the result of the experience of doctors working in the hospitals, and the benefit of that experience is shared with all the world. The voluntary system is practically peculiar to this country. It suits the genius of our people, which is always individualistic, far better than the State-controlled institution. Under the voluntary system our medical schools, because they have attracted the best brains in the profession, have become the most famous centres of medical education that the world knows, and more especially in the practical art of medicine in which Englishmen have taken the leading place since the time of Sydenham. Under our system of teaching the British general medical practitioner is easily the best trained in the world, as the war very clearly demonstrated. The acid test of efficiency is readiness of adaptation. "Our surgeons," says MacPhail, "performed the most delicate and profound surgery in field ambulances and casualty clearing stations, upon trestles in huts or open tents, with only the heat from a brazier and not even running water." They were able to bend their means to their needs because they were trained by direct contact with actuality in the admirable British way which is learned in hospital schools.

Side by side with this ancient institution of voluntary hospitals—and the oldest voluntary hospitals are over 800 years old—there has grown up with increasing frequency in later years another set of institutions, the Poor-law hospitals, formerly infirmaries, whose resources are derived from the rates, and much searching of heart is obvious in the medical profession at the present time as to the ultimate fate of the voluntary hospitals in competition with these rate-aided institutions. At the present time the Poor-law hospitals are under the management of Boards of Guardians. Mr. Neville Chamberlain proposes some time next session to bring before Parliament a measure which will transfer the control of these hospitals to local municipal authorities; in the case of London to the London County Council.

STATE-CONTROLLED HOSPITALS.

This is a very bureaucratic age, and the encroachments of bureaucracy upon all our institutions has never been more insistent or menacing. The voluntary hospitals shine out as some of the last great foundations to remain essentially untrammelled by State inter-

ference. Are they destined in their turn to yield to that ever overwhelming tide of State control, and would they better serve the needs they exist to satisfy if they ceased to be voluntary and became subject to Government or municipal control? It must be remembered that the Poor-law infirmaries have been in existence for very many years and have not been conspicuously successful in winning the affection of the patients treated nor in the advancement of medical science. Those of us who had experience of State-controlled hospitals during the war were, I think, impressed by the absence of elasticity and initiative in those institutions. When the War Office wanted 300 wounded soldiers to be suddenly admitted to hospital in a grave emergency they appealed not to their own State hospitals, but to the voluntary London Hospital, which, because of the resilience resulting from voluntary management, was able within 24 hours to convert 300 of its beds for military purposes. Prof. Hey Groves has made himself the champion of the State-aided and State-controlled hospital. He was obviously entirely unaware of the actual position of the voluntary hospitals as regards their present financial and moral stability, for he declared "the system is not dead, but moribund, and its laboured life is kept going by stimulants and artificial respiration." This premiss, upon which he bases his attack, I think has been demonstrated to be unsound by the figures I have given.

Prof. Hey Groves, like many other persons in this age, seems to be obsessed by the material as opposed to the spiritual, forgetful of the old Greek adage that the strength of a city lies in its men, not in its walls. He ascribes to what the Americans picturesquely call "plant" more importance apparently than to the quality of teaching. There is a slashing attack upon what one might call this American conception by Sir Andrew MacPhail.[1] Dealing with American methods of medical education he says: "To Americans a school too often means buildings, equipment and machinery . . . To English teachers, bred in the tradition of our great voluntary hospitals, a medical school derives its virtue from the quality of the human beings who teach or learn in the school." The difference of outlook is cardinal. It is a matter of tradition and sentiment, about which there is no argument. This dependence upon external adventitious aids has been satirised by MacPhail as an application of the American method in business, which he sums up as "uniformity, single standard, mass production; what may be called the mechanical method." "Under this system," he says, "the surgeon knows the patient merely as an arrangement of type-written cards, he sees him for the first time unconscious upon the table, when he comes, like a masked executioner, to complete the sentence of the judge." A Canadian surgeon whom I met on a voyage some years ago gave me a mirthful description of an experience he had had in an American operating-theatre. He told me that he had been taken into the ante-room by the operator, where all the participators were stripped to the skin, scrubbed all over with nail-brushes and soap, then clothed in sterilised pyjamas, and the cohort thus prepared waded barefoot into the theatre in a sea of antiseptics. The Canadian surgeon, no inconsiderable authority himself, took the trouble to examine the statistics of the American operator as compared with his own, which were in the same field of practice, and was comforted to find that his own figures compared extremely favourably with those of his colleague.

Prof. Hey Groves attempts to support his argument for what one may call the municipalisation of the voluntary hospitals upon the advantages he claims for the control of education by the State. It seems to me that this parallel is singularly unfortunate for his thesis. There is a widespread present uneasiness as to the results of this particular experiment in education, the expense of which has become a most formidable and ever-augmenting strain upon our community, and the results of which are by no means commensurate with the fantastic cost. It so happens that within the last few days a convincing object-lesson has been furnished of the disastrous results upon secondary school education of the extension of municipal or departmental control of schools. A public school in Sheffield, King Edward VII. School, found itself in difficulties with the Sheffield City Council which had been captured a short time previously by the Labour Party, who used their majority to disso've the independent governing body of the school and to place it under the control of the "Secondary School Sectional Sub-Committee," that is to say, under municipal control. The immediate result was that the Headmasters' Conference removed the school from its list of accredited public schools, and the headmaster himself, a man of great distinction, resigned his appointment. The headmaster of Harrow, commenting upon this incident, makes some observations very pertinent to my present thesis. "Schools," he says, "are living things; they are not machine-made, mass-produced shops for the sale of instruction." "Every great school is the expression of human personalities, whose work cannot be fruitful to the utmost unless it is devoted to the service of a school whose individuality is felt to be both real and free to develop on lines not necessarily prescribed. But this sense of individuality is lost when a school becomes one of a mass, all nominally responsible to an education committee of changing membership, which is itself largely in the hands of its director."

The estimation in which State-aided education is actually held may be best gauged by the individual man's actions. As soon as a man in any walk of life is able to afford it he sends his children to be educated, not at the council (State-aided) schools, but at the public (voluntary) schools.

CONCLUSION.

I would sum up the position, therefore, in the following way:—

1. The voluntary hospitals have actually turned the corner of their fate and are more solvent at the present moment than they have ever been in recent history.

2. The voluntary hospitals have won the affection and confidence of the whole community in a way which would not be likely to be achieved by any other institution.

3. In their advancement of medical science the voluntary hospitals have immeasurably outdistanced Poor-law infirmaries who have been their competitors for a sufficiently long time to allow of conclusions being drawn from that competition.

4. The voluntary hospitals command a tradition of service which cannot be imitated by any institutions lacking their long organic growth.

5. The administration of the voluntary system is incomparably cheaper, because it is voluntary, than any State-controlled system could be. Moreover, the purposes to which money under State control would be applied would probably not be the same as those upon which voluntary hospitals are concentrated. They would be inferior purposes in every case, and the waste of money consequently would be even more disastrous than the actual expenditure would indicate.

6. The voluntary hospitals are the growth of centuries, moulded to their uses in each generation, and representing the sturdiest of English characteristics, that of self-help; while State institutions are the product of a weak-kneed generation, ever more and more dependent upon that nebulous abstraction, the State, a dependence which unhappily so often means in practice the glorification of the art of sponging, as witnessed by that most formidable incubus of modern days, the unemployed dole.

These are the propositions to which I invite your assent and, if I win it, your resolve that you will help by every means in your power to maintain the voluntary hospitals, to which you all owe so much.

[1] Brit. Med. Jour., Sept. 3rd.

An Address
ON
INSOMNIA.

Delivered before the Medical Society of London on Dec. 12th, 1927,

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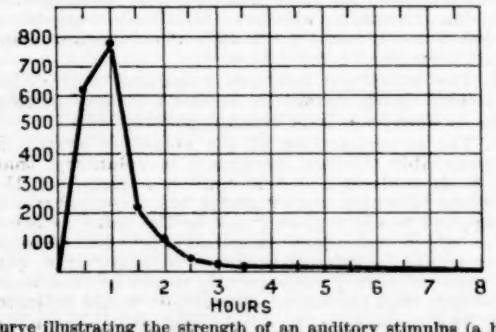
SLEEP has been defined as "a period of rest for the body and mind, during which volition and consciousness are in partial or complete abeyance and bodily functions partially suspended." (Dorland.) One writer speaks of sleep as a habit, another says it is a function of the whole brain if not of the whole body. (Wechsler.)

Some physiologists say that sleep is more necessary than food, that "a man can fast for four or five weeks, but if forced to do without sleep he will die in a few days." (Lyle and De Souza.) But Dana says, "Man can exist without sleep for about the same time that he can do without food—viz., three or four weeks—but he cannot live without it." Experiments by Piéron showed that young dogs deprived of sleep died in from four to six days, but Kleitman, of Chicago, and his colleagues deprived themselves of sleep for periods of from 40 to 115 hours, and with the exception of intense drowsiness, remained remarkably normal. During these periods the blood, urine, and fæces were examined, the heart, pulse, blood pressure, respiration, appetite, digestion, basal metabolism, and reflexes were all observed, "and," says Halliburton, "any departures from the normal, if present at all, were trivial."

NORMAL SLEEP AND ITS POSSIBLE CAUSES.

In normal sleep the most striking and important fact is the partial or complete loss of consciousness, due undoubtedly to the lessened activity of the brain tissue and particularly of the cortex cerebri. The power to make conscious movements is first lost, and the use of the special senses disappears. The first of these to go is vision, the last hearing. During

FIG. 1.

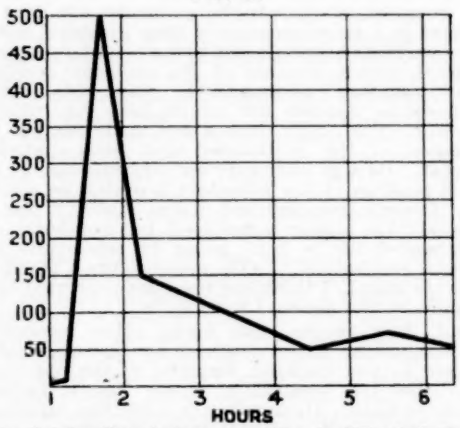


Curve illustrating the strength of an auditory stimulus (a ball falling from a height) necessary to awaken a sleeping person. The tests were made at half-hour intervals, and the curve shows that the distance through which it was necessary to drop the ball increased during the first hour, and then diminished, at first very rapidly, then slowly. (Modified from Howell's "Text-book of Physiology," tenth edition, p. 262. Published by W. B. Saunders Company.)

sleep hearing is the most easily excited sense, the sense of touch is more difficult to arouse, and taste and smell still more difficult. All voluntary muscles are relaxed. Respiration becomes deeper and slower and tends to rise and fall as in Cheyne-Stokes respiration. The secretion of urine, tears, and mucus are all diminished. When the sleepy child rubs its eyes it does so because the secretion of tears is becoming less and making its eyes feel gritty. Pulse frequency is lessened, blood pressure falls, the knee-jerks are entirely lost, and the Babinski sign becomes positive. All these point to inactivity of the cerebral cortex.

A very important point in normal sleep is the variation in its intensity. This has been investigated by many observers, Kohlschütter, Czerny, Howell, and Michelson, to mention a few. Their investigations were made by finding, at regular intervals during sleep, the intensity of auditory stimuli required to cause waking. It was found that there was a

FIG. 2.



Curve of intensity of sleep according to Mönninghoff and Piesbergen. The figures along the ordinate show the relative intensity of sleep, measured in milligramme-millimetres, expressing the intensity of the sound, caused by a falling body, necessary to awaken the sleeper. (Modified from Howell's "Text-book of Physiology," p. 264.)

rapid increase in the intensity of sleep during the first two hours of slumber, which reached its highest point between the first and second hours, and then dropped very rapidly again, so that by the third hour the sleeper was very near the margin of consciousness. From that point onwards the depth of sleep gradually became less until waking occurred. This is well shown graphically in Kohlschütter's chart (Fig. 1). Mönninghoff and Piesbergen, in similar experiments, observed a second rise in the intensity of sleep during the sixth hour (Fig. 2), and Czerny shows a very much greater rise from the seventh to the eleventh hours in a child of 3 years old.

Many physiological explanations or theories of the cause or causes of sleep have been put forward. Preyer and Obersteiner attribute sleep to fatigue in the brain cells, caused by the accumulation of acid waste-products in the blood. Pflüger suggests that it is due to gradual consumption, during the waking hours, of the intramolecular oxygen in the brain cells, whilst Duval, Cajal, and others suppose that the cortical cells are cut off from incoming impulses by contraction of their dendrons.

A number of writers attribute sleep to the formation of a special toxin, which accumulates in the blood during waking hours, and finally inhibits the activity of the cortical cells. There are also the inhibitory theories of Pavlov and Shephard. The floor of the third ventricle, the aqueduct of Sylvius, and the pineal gland have all been considered as playing an important part in the production of sleep. But the one important fact would appear to be the cerebral anæmia which exists during sleep. Howell, Mosso, and others have demonstrated by plethysmographic observations that in sleep the volume of the limbs is increased. Arterial pressure is known to fall, and Hooker has shown that venous pressure also falls, and that a venous pulse may be observed in the hand, indicating a dilatation of the cutaneous arteries. More blood, then, is circulating in the limbs than during the waking state, and the volume of blood remaining the same there must be less blood

in the brain, and observations of the brain itself through a trephine wound have shown that its volume is decreased during sleep. Sachs and Hausman, in their book on "Nervous and Mental Disorders," say, "It is generally admitted that a very important factor is the cerebral anæmia during sleep. As soon as we go beyond these facts we are indulging in pure speculation."

INTERFERENCE WITH SLEEP.

The periodical recurrence of sleep would appear to be due to fatigue of, and therefore lessened activity of, the vaso-motor centre in the medulla brought about by its continuous activity during the waking hours. If we bear in mind the important phenomena of sleep to which I have drawn attention, the nice adjustment of the circulation, the fall in blood pressure, the dilatation of cutaneous blood-vessels, the slowing of the heart and respiration, the rapid rise, and also the equally rapid fall in the intensity of sleep, and the varying degree of loss of the special senses, we can, I think, form a useful idea of the causes of some of the varieties of insomnia and perhaps of their rational treatment. Some of these experiments also, I think, tend to show that insomnia in a healthy adult produces less serious results than insomnia in the young.

Anything which upsets the nice readjustment of blood distribution may give rise to insomnia. Anything which maintains the activity of that most easily aroused special sense—hearing—or the next most easily activated—touch—also anything which keeps up mental, and therefore cerebral, activity, for this demands adequate blood-supply to the brain, will tend to cause sleeplessness. And so it is easy to understand that insomnia will arise in states of excitement, worry, anxiety or emotion of any kind, in pain, in fever, in cases of heart disease, respiratory disease, and in cases showing extremes of arterial pressure from whatever cause. We have many of us no doubt experienced the insomnia which is brought about by a sudden change in atmospheric pressure when rapidly ascending to a considerable altitude, and again on descending to a much lower level. I can well remember going up to the snow-line from Montreux in one day and being completely sleepless that night, and again being equally sleepless when descending again to Geneva.

The indifferent night's sleep obtained on the first night in a strange bed is due, I think, largely to unaccustomed touch sensations conveyed by the bed and bedding.

NOISE AND CONSCIOUSNESS.

A very common complaint nowadays is, "I go to sleep whenever I get into bed and sleep soundly for two or three hours, then I wake up and cannot get to sleep again until the early morning." (I think the writer of the Book of Proverbs must have suffered thus when he wrote, "He that blesseth his friend with a loud voice, rising early in the morning, it shall be counted a curse to him."—Prov. xxvii. 14.) In the almost ceaseless noise of a great city like London this waking after some two hours of sound sleep is not remarkable. Those of us who, not infrequently, have to be at work during the night know that the noise of traffic does not die down, for I think it never ceases entirely much before 3 o'clock in the morning. The person who goes to sleep, say, at 11 P.M. at 1 or 1.30 A.M. suffers from that drop in the intensity of sleep which is illustrated in Figs. 1 and 2, and is kept awake by the traffic until the noise is somewhat reduced and the second rise in the intensity of sleep is due.

Others complain that, to use a very expressive Scottish phrase, they "cannot catch their sleep" when they settle down in bed. These people lie awake for an hour or two after which they often fall very soundly asleep and so remain until "called" in the morning. I know a lady who goes to bed regularly at midnight and never falls asleep until 3 A.M., but from that hour until 8 A.M. she sleeps so soundly that this five hours of sleep is quite sufficient for her.

Then there are those who, sleeping for the first two or three hours wake and remain awake, failing to fall asleep again during the early morning, and, lastly, there are many who complain of sleep repeatedly disturbed by dreams. These are always or repeatedly near to the margin of consciousness, whose sleep is never sound and never restful.

Complete and entire absence of sleep is very rare excepting in acute illness, painful diseases, or those neuropathic and psychopathic conditions which will be dealt with by those who follow me to-night. Insomnia in any of these forms may arise in conditions of ill-health, trivial or serious, and its treatment is the treatment of this underlying cause. Those who, without any ascertainable ill-health, habitually wake after two or three hours' sleep and lie awake, I sometimes advise to go to bed an hour or two later and rise at a correspondingly later hour. In this way, and particularly if they live, as I do, on a main traffic route, their insomnia is overcome or avoided. For I have found for myself that it is little good my being in bed in London before midnight. The traffic invariably wakes me at about 2.45 A.M., but the decrease in its volume after that hour allows me to fall asleep again and sleep until morning. I seldom sleep throughout the entire night in London, but I seldom wake during the night in the quiet of the country.

SOME COMMON CAUSES OF SLEEPLESSNESS.

This waking in the middle of the night is common in the debilitated and the aged. It is common in those who take too little food, or who take their evening meal very early. It is common in those with very low blood pressure from whatever cause, as is also the inability to fall asleep in the first instance. An extreme example was that of a lady sent to me by the Society for the Relief of Necessitous Gentlewomen, to which I am physician. Owing to sheer poverty this patient's daily food allowance, proved upon inquiry, to be one cup of soup, two or three of tea, and a few slices of bread and margarine. Her chief complaint was that she slept for only two hours in the early part of the night. Her systolic blood pressure was 110. She showed no signs of disease, and her insomnia disappeared when she had been provided with adequate food.

An alteration in the hour at which the last meal is taken is sometimes important, and in the case of the aged and debilitated, some hot liquid food in the middle of the night, milk, or one of the patent foods, will often act as a soporific. In the case of patients with very low blood pressure who wake thus, I have not infrequently found that a cup of hot tea or coffee will enable them to sleep again, I suppose by raising the blood pressure. Any of these can easily be placed in a thermos flask at the bedside.

It is hardly necessary here to speak of many of the common causes of sleeplessness—the late supper or heavy dinner, too much alcohol or too much tobacco, the taking of coffee or tea in the evening, overwork or working until near bedtime, sleeping in a room which is too hot, badly ventilated, or too cold, lying with the head too low and perhaps in some cases too high, wearing too much clothing at night, being overburdened with bedclothes, or being too cold in bed. All precautions regarding these would appear to be matters of ordinary common sense, yet we are all so accustomed to find this quality lacking, even among educated persons, that it is necessary to pay particular attention to these details, and even to see that a suitable and proper type of bed is being used. For my own part, I prefer the box-spring type of bed to any other.

It is well never to accept a complaint of insomnia without very careful investigation. Only a few days ago a lady consulted me, complaining of complete loss of sleep. She affirmed repeatedly that she got no sleep at all, but under rather severe cross-examination she had to admit that she got five hours of sleep every night, and a middle-aged, valetudinarian gentleman, who made a similar statement, was found, when a nurse was employed to record his hours of slumber, to sleep regularly for 7½ hours.

SUGGESTIONS FOR TREATMENT.

The treatment of sleeplessness due to pain or painful conditions is so obviously the treatment of the cause of pain as to be outside the scope of this discussion, but I may perhaps be pardoned for referring to one or two remedies which may relieve pain and admit of sleep.

Many kinds of pain are relieved by a dose or two of aspirin. The pain in a carious tooth with an exposed pulp cavity is promptly relieved by the application of a little pure carbolic acid on a tiny pledget of wool, and even the misery of a dental abscess may be relieved sufficiently to permit of sleep by the application to the face of the old household remedy, a pepper plaster, made by soaking a piece of thick flannel in brandy, peppering it freely by means of the pepper-pot, and tying it on to the face—pepper to skin. It can be left on all night without fear of blistering or marking the skin. Pruritus ani and pruritus vulvæ can often be best relieved by the application of a conium ointment which, if necessary, can be prepared with double the quantity of succus conii in the Pharmacopœial ointment.

Insomnia occurring in patients with hyperpiesis, particularly in chronic renal disease, may be relieved by a good dose of calomel, which, as long ago pointed out by the late Sir William Broadbent, acts as an hypnotic long before it acts as a purgative. A hot bath immediately before going to bed will help some patients to sleep, chiefly those with too high blood pressure, and in those with very low blood pressure strychnine given two or three times a day is often of great service. The sleeplessness in advanced mitral disease with engorgement of the liver is often very much relieved by placing as many as a dozen leeches over the hepatic region. Leeching has gone very much out of fashion of late, which I think is a pity. In the dreadful headache and insomnia following severe cerebral concussion, nothing gives such relief as a couple of leeches on each temple or behind each ear.

HYPNOTICS.

So far I have made no mention of hypnotics because, I am sure, it will be agreed that we should avoid the use of these drugs in the treatment of insomnia if that be possible. But there are cases in which the sleeplessness itself is causing such havoc that these must be given. We must not let the patient die or go out of his mind whilst we are endeavouring to cure the disease causing his sleeplessness. Sometimes the original cause of the insomnia having been removed the condition remains as a sort of bad habit.

In my early days we had comparatively few hypnotic drugs to choose from. Now their name is legion, but I am not at all convinced that the newer remedies are the best. The bromides are, I think, invaluable, and combined with chloral hydrate form an excellent and safe sleeping-draught in a very great many cases. Insomnia is not common in children excepting in conditions of obvious illness which is its cause, but when it is necessary to give a child an hypnotic it is well to remember that they can take both bromide and chloral, even in early infancy, safely and with good effect. Again, one is often called upon to prescribe a sleeping-draught for wife or mother worn out and sleepless with long watching, nursing, anxiety, or sorrow. Nothing acts so well or so safely as bromide and chloral.

In the cases where the patient sleeps for two or three hours, then wakes and lies awake for hours, a dose of one of the bromides at bedtime on several successive nights will sometimes effect a cure. But often in these cases a dose of sulphonal at bedtime acts well. Sulphonal takes a long time to produce sleep. If the dose is timed properly it will produce its effect at about the time the patient would otherwise wake. If the insomnia of this type has become a bad habit, the cause having long since been removed, a dose of sulphonal, given thus on three successive nights, will not infrequently effect a permanent cure. Where a patient is long in going to sleep, sleeps for only a short time, then remains awake for hours, a combination of trional and sulphonal is often useful. The trional sends him to sleep and, later, the sulphonal keeps him asleep.

Veronal I am not very fond of. It has sometimes seemed to me to be more toxic than many of these barbituric acid derivatives, all of which I have found to be unduly so in patients suffering from a toxæmia of any kind, and particularly that occurring in or arising from renal disease.

Aspirin will often act as a producer of sleep, in my opinion probably by causing a dilatation of peripheral vessels. It is often of great value in the pain and discomfort following a surgical operation. It is safe; it can be given by the bowel. I do not know that it has any undesirable after-effects, and even if the patient does develop an aspirin habit it is not a very serious matter.

OPIUM.

But opium and its derivatives must remain for all time the great pain-killers, and in painful conditions the great sleep-producers. In proper cases they are invaluable. Morphia in one form or another, and in many cases combined with atropine, is the one safe hypnotic in serious heart disease, acute pneumonia, and, following the major surgical operations, severe injuries and shock.

There used to be a prejudice—I do not know whether it still exists—against the use of morphia for the dreadful insomnia of delirium tremens. But I am not sure that in delirium tremens hypnotics poured into a hopelessly disordered stomach in dose after dose do not lie unabsorbed until, with commencing recovery, they are all absorbed at once, poisoning the patient. Would not morphia given hypodermically be both safer and more effectual? Again, it used to be taught that it was not safe to give morphia and bromide together. Is this so? Is hyoscine a good remedy in delirium tremens? I have found it of the greatest service in some cases of insomnia, and it has this great advantage, that it can be administered without the patient knowing that any hypnotic has been given. The following is a typical case:—

> Shortly after the war a young war widow living in an hotel was robbed one night whilst at dinner of all the trinkets her late husband had given her, together with the personal belongings of his which had been sent to her from France after his death—his watch, his signet ring, and the rest. Already depressed and "nervy" she completely broke down, and was treated for some days by other women in the hotel, chiefly with stimulants and sympathy. After she had been under treatment in a nursing home for some time and was much better, she remained sleepless. In her last cup of hot milk at night, for several nights, was dissolved gr. 1/150 of hyoscine hydrobromide. Her insomnia was soon cured, and her confidence in herself restored, because she thought that her sleep was quite natural. For very long, after this nightly dose of hyoscine had been omitted, she continued to take her cup of milk, satisfied that it would send her to sleep.

It is a very great advantage, when hypnotics have to be administered, to be able to give them without the patient's knowledge, but this, as a rule, can only be accomplished in acute or serious illness and with the help of a tactful nurse. But I always make every endeavour not to give a patient a prescription for any of these remedies. I prefer to give him two or three tabloids, tell him when and how to take them, and to return next day and report the effect. The dose can then be repeated or not as desired.

I have said little or nothing about the more serious forms of insomnia. It is hardly necessary to remark that whenever complaint is made of insomnia—and especially when we meet with that condition of complete insomnia for which the Romans had the more expressive term, exsomnia—we must be very carefully on the look-out for serious disease. And finally I would say, when treating insomnia, it is always a mistake to give hypnotic drugs until there is no doubt that they are really required.

VACCINE TREATMENT OF IMPLANTED TUMOURS IN THE RAT.

SUBSEQUENT IMMUNITY.

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IN previous communications[1] the following facts have been reported: 1. Specific antisera can be produced which kill cancer cells cultured in vitro without damaging cultures of normal tissues. 2. When applied under specially favourable conditions to certain implanted tumours in the living animal, such antisera not only cause regression of the treated tumour, but of a coexisting untreated tumour as well. Animals so cured are immune to subsequent inoculations of the tumour concerned. 3. The mechanism of this immunity has been demonstrated to be due to the presence of antibodies in the serum of the immune animal. These, however, only become effective in the animal which produced them, when aided by some excretion from extravasated leucocytes. It may, therefore, be accepted that animals can acquire an immunity against tumours comparable in many ways to immunity against bacteria. Mere excision of a tumour does not evoke such immunity, nor does gross local destruction of a growth by powerful poisons. In the latter case destruction of the cells has apparently gone too far, so that not only their vitality but also their antigenic factors have been destroyed. Many attempts were made to attenuate tumour fragments by means of heat, cold, antiserum, ether, distilled water, and other agents in such a way that they should lose their infectivity while retaining their antigenic power. As previously reported, these attempts were almost always unsuccessful. It was found impossible to accomplish the appropriate degree of damage; either the fragments were insufficiently attenuated and gave rise to tumours when inoculated into animals, or the process of destruction was carried too far, the antigenic factor in the cells was destroyed, and no immunity was evoked. There was still a hope that (on the analogy of bacterial vaccines) if some reagent could be employed, the intensity of whose action could be graded so as just to kill the malignant cells, without at the same time altering them chemically so much as to do away with their antigenic properties, the injection of these cells might immunise an animal and perhaps even cause regression and cure of a growing tumour.

Formalin, which is used for a similar purpose in the preparation of bacterial vaccines, suggested itself as a suitable reagent for this purpose on account of the fact that it kills and fixes cells without altering greatly their chemical constitution. There was also the possibility that formalin might preserve the antigenic factor in the cells in such a way as to prevent it from altering seriously during the period which must elapse after inoculation into the body and before absorption into the blood takes place.

The present paper deals with the investigation of these possibilities.

Methods and Experimental Observations.

(*a*) *Attempts to produce immunity in normal rats by means of an emulsion of formalised tumour cells.*—Jensen's rat sarcoma (J.R.S.) was ground in an apparatus (broyeur Latapie) which reduces it to separate or small groups of cells without interfering with its infective power. This material was mixed with about ten times its bulk of 0·1 per cent. formalin, and was injected subcutaneously and intraperitoneally at various periods after mixing. It was found that even after a few minutes the infectivity of the tumour cells was entirely destroyed, but although the injections were repeated no adequate degree of immunity was evoked. In spite of these adverse observations, it was (on the analogy of the results obtained with antiserum) considered worth trying whether by inoculating formalin into growing tumours *an effective vaccine could be produced in the living animal.*

(*b*) *Study of the effects of injecting formalin into growing rat sarcomata.*—Approximately 0·1 c.cm. (a large dose) of minced, actively growing J.R.S. (from 10 to 14 day old tumours) was inoculated into the flank of young adult black and white rats—i.e., the site at which it grows most vigorously. In a week's time tumours of about 1 inch in length and weighing roughly 1/150 to 1/100 of the animal's body-weight resulted. The material used in all these experiments was so virulent that natural regression very rarely occurred, and in 95 per cent. of cases the control animals died in three to four weeks. It will be appreciated that using a tumour of such virulence entails heroic dosage of formalin and a rapidity of judgment which would be unnecessary in the slower-growing tumours of man. Untreated controls were kept in each experiment.

Into six to eight day old tumours, formalin* diluted with distilled water, and in some cases with saline, was injected slowly and with as little pressure as possible. After many experiments 1 per cent. of formalin was found to be the most appropriate dilution. About 1 to 2 c.cm. of this solution was injected daily until the tumours ceased to grow and acquired a peculiar soft doughy consistency, which only experience can teach one to recognise. A considerable area of inflammatory thickening surrounded the tumours and no doubt this reaction aided in producing cure.

If the treatment is carried out skilfully and is stopped at the right time, regression takes place gradually (beginning after five or six days) and becomes complete without the occurrence of ulceration. If it is carried too far ulceration is apt to occur with the risk of prejudicing the subsequent immunity. Too prolonged treatment may also do harm by destroying many of the extravasated leucocytes which play an essential part in the process of cure. If, on the other hand, treatment is stopped too early the remnants of the very virulent tumour used may gain such an ascendancy that cure is unattainable even if the injections are resumed. The number of injections must be varied according to the progress of the case; in some instances only two or three doses of formalin are required, but generally five to eight injections and sometimes a dozen or more are necessary. The animals should never be injected when they are thirsty, since thirst increases the rapidity with which the formalin is absorbed into the blood. The first dose injected should be small, 0·5 to 1 c.cm., but a second injection may be given six to eight hours later when local œdema has appeared. The injections should not be given too near the skin in order to lessen the risk of ulceration.

In tumours treated by formalin in this way every grade of dilution of formalin must be present at some area or another. In some parts the concentration will be too weak to kill the cells, at other places so strong as to destroy the antigenic factor. In yet other areas the appropriate dilution will occur—i.e., a concentration of formalin just adequate to kill the cells, without destroying their antigenic constituent.

It is possible that a yet more effective reagent than formalin may be found, but where full-grown rats are selected and the tumour is not over 1/100 of the body-weight of the animal—i.e., 2 cubic centimetres or so in bulk—it is possible, after some months of experience, to obtain even with formalin well over 90 per cent. of cures. The subsequent immunity is of a very high order, for out of 43 animals cured and subsequently inoculated 40 were found to be immune—i.e., 93 per cent.

[1] Lumsden, T.: THE LANCET, 1926, ii., 112; Ibid., 1927, i., 116.

* Everywhere in this article the word "formalin" refers to the commercial product containing roughly 40 per cent. of formic aldehyde. The 1 per cent. formalin used for treatment contains, therefore, about 0·4 per cent. of formic aldehyde.

The details of all the completed experiments are as follows:—

Date of exp. in 1927.	Rats treated.	Rats cured.	Date of exp. in 1927.	Rats treated.	Rats cured.
21/3	13	8	17/10	7	7
19/5	8	5	24/10	5	4
26/9	24	17	31/10	3	3
4/10	10	10			

In all 70 animals were treated, of these 54 were cured—i.e., 77 per cent. It will be noticed that as the result of increased experience the percentage of cures rose in the last four experiments to 96—viz., 24 out of 25 tumours disappeared.

Subsequent Immunity.

Forty-three cured rats were inoculated on the same day—i.e., at varying periods after cure—with 0·1 c.cm. of J.R.S. fragments. Twelve normal and eight uncured treated rats were given a like dose of the same material as controls. The rapid growth in all the normal control animals showed how virulent the test J.R.S. fragments were. In every instance the inoculations into the cured rats grew much less rapidly than in the controls, but probably in most cases proliferation occurred for a day or two. The test tumours in cured rats could be divided into three more or less overlapping groups: (1) Those in which no increase in size was seen, the graft being imperceptible after a week or 10 days—(12 rats). (2) Those in which well-marked proliferation with increase in size of the graft took place for seven to ten days, but which thereafter regressed and had disappeared in from 14 to 21 days—(28 rats). (3) Those in which growth though slow was progressive (3 rats)—i.e., in 7 per cent. All the test tumours were measured every two to three days, and portions of the growth from typical examples of each of the three groups were removed for histological examination.

Histological Examination of Treated Tumours and of Test Implants.

(*a*) *Treated tumours.*—Twenty-four hours after 1 per cent. formalin has been injected a certain amount of hæmorrhage has taken place into the growth and in some areas many cells have pyknotic nuclei. Already round the outer edges of the tumour a dense concentration of leucocytes of all kinds has taken place. Over the greater part of the tumour, however, the sarcoma cells are still healthy and are actively dividing.

Later on, when regression is well marked, in progressively increasing areas death of the tumour cells has occurred, some have pyknotic nuclei, in many others the nuclei have entirely disappeared. A large army of leucocytes invades the tumour, and at length little but stroma and blood-vessels remain, these ultimately disappear, the whole growth becoming replaced by scar tissue.

These appearances resemble more or less those observed during the regression of a test inoculation in an immune animal, but the proof that immunity plays a large part in the process of cure does not rest on this similarity alone; it is demonstrable also in other ways. Thus if the serum of a rat whose tumour is disappearing as the result of treatment is applied to a culture of mouse cancer cells it damages them seriously. A normal rat's serum never does so. A further proof is that the formalin injections may be discontinued before the tumour has completely disappeared, and while many sarcoma cells are still alive. Once the formalin has definitely turned the scale of the battle between the tumour cells and the rat's defensive forces (antibodies and leucocytes) treatment should be stopped. The remaining portion of the tumour will regress without further outside assistance.

(*b*) *Test implants.*—Sections of many tumours at various stages of growth and of regression have been examined and the detailed observations will be the subject of a future communication. It may, however, be of interest to give here some of the facts, and the interpretations placed upon them.

1. Where a very high degree of immunity is present, as in the case of a rat cured of a large tumour by two injections of concentrated antiserum, the test graft disappears as rapidly as in a hyperimmunised animal. In such instances the inoculum regresses without any appreciable period of proliferation. The cells at the periphery of the graft, which attempt to invade the resistant tissues, are killed, and the whole inoculum is rapidly destroyed, death proceeding from the circumference towards the centre.

2. In animals less highly immunised—e.g., in cured but not hyperimmunised rats—the graft generally wins a local victory at first. Invasion of the normal tissues by the sarcoma cells succeeds, and a stroma is commandeered almost as effectively as in the normal unprotected animal. Within a few days, however, reserves of trained leucocytes are mobilised round the tumour and sooner or later (7 to 21 days), in 90 per cent. of cases, the battle ends in victory for the animal and the test implant disappears.

Such regression is clearly not caused by the animal refusing in some mysterious way to furnish a stroma. Death is not due to simple inanition, for in that case the cells at the centre of the inoculum being least nourished would die earlier than those which obtain a subsistence by soakage of lymph at the circumference. The reverse is what actually happens. It is clear, therefore, that the peripheral cells which die first must be actively destroyed by forces other than starvation. The effective factor in rapid destruction of a graft is that the sarcoma cells are, in a highly immune animal, unable to invade the body tissues successfully. Conversely in the unprotected animal, when successful invasion is achieved, there follows an inflammatory reaction with formation of new blood-vessels and connective tissue and progressive growth ensues.

"*Metastatic*" *tumours.*—In some experiments just before, in others a few days after beginning treatment of a sarcoma of the right flank, a graft was implanted also in the left flank in order to simulate a metastasis. The study of this "metastasis" gave a very useful guide as to the rise and progress of immunity. In all cases the second implant grew for several days. Then if the right flank tumour was responding satisfactorily to treatment, the resulting immunity was evidenced by the cessation of growth and later regression of the "metastasis." If, however, the cure of the treated tumour was delayed the "metastasis" continued to grow and in some cases attained so large a size as to impede or prevent cure, presumably by absorbing the antibodies which were being produced in the animal. Since this experiment entails a struggle between opposing variable factors it is difficult to predict the results when using a tumour of great virulence. If, however, the appropriate conditions are attained, the results are interesting and convincing. In several cases the fact that the "metastasis" was seen to be regressing made it possible to stop the formalin injections into treated tumours earlier than one would have dared to do but for this indication of the onset of immunity.

Remarks.

When tested upon tissue cultures of normal and malignant cells it is found that formalin has little if any specificity in its action on cancer cells. It appears, however, to have the power so to kill these tumour cells in the body that they become antigenic. Absorption of the vaccine thus produced evokes a general active immunity of the most exquisite specificity. Reagents are produced which attack and destroy not only the remaining portion of the original tumour, but also any small coexisting untreated tumour which is present, without damaging any normal organ or tissue. The following points must be kept in mind: The younger the rat the more difficult it is to evoke immunity, and to effect cure. The smaller the tumour the easier it is to cause regression, but the less powerful is the subsequent immunity. There is, therefore, a time of election which is the most favourable for beginning treat-

ment. In a rat this is when the tumour has attained, say, 1/150 of the animal's body-weight; in a human being it would probably be earlier. The sooner treatment is stopped after cure is assured the more effective is the resulting immunity. Severe ulceration lessens the degree of immunity attained.

It has been impossible to try the curative effect of this treatment upon spontaneous growths on account of the lack of material. A single observation is of interest in this connexion. In a rat which was suffering from a spontaneous adenocarcinoma of the breast, the cure of an implanted J.R.S. by means of formalin injections was followed by marked regression of the spontaneous mammary tumour which is now only about one-fourth of its original size and is diminishing steadily though slowly. Since this is an isolated instance, and may be an example of spontaneous regression, too much reliance must not be placed in its significance.

Vaccine treatment has not yet been fully investigated in carcinomata, and may conceivably be less applicable to these than to sarcomata, but judging from the analogy of antiserum treatment this is unlikely, for with the latter reagent cure was even more sure and easy in the case of the rat carcinoma (R.9) than when J.R.S. was the tumour treated. Some cases of mammary cancer (M.63) in mice were treated with formalin, but the mouse is a very unsatisfactory animal for such experiments, its soft tissues tend to ulcerate and do not retain injections well; also cancer of the breast is in mice very apt to invade the peritoneum, a complication which makes treatment by formalin difficult and ineffective. More adverse still is the fact that, like very young rats, mice have rather feeble powers of producing active immunity to tumours. In the last batch of mice treated, out of seven mice five appear to be cured, but since some ulceration occurred in all of them, it is uncertain whether these five will be immune when tested later.

Vaccine treatment of the kind referred to above is at present only applicable to comparatively early and small tumours, and such as could be easily removed surgically, but the fact that it is followed by general immunity renders it when effective infinitely superior to excision, since it precludes the possibility of recurrence. When a large tumour is treated in this way the treatment is unavailing. A struggle for existence is taking place between the tumour and the animal it infests. There is a limit to the amount of protective material which the animal can produce, and if the tumour is beyond a certain size it appears to absorb the defensive reagents more quickly than the animal can manufacture them. Progressive growth of the tumour and death of the animal ensues. To give the treatment a fair trial it is therefore essential that it should be applied in comparatively early stages of the disease.

It has already been shown [1] that local inoculations of specific antisera bring about the same train of events as the injections of formalin referred to above. Of the two reagents formalin more readily destroys the local growth but the subsequent immunity is more certain after cure by antiserum. A few recent observations suggest that by concentrating antiserum to, say, one-fifth of its bulk, by evaporation at 37° C. in vacuo, its local destructive power may be made to equal that of formalin, in which case the specificity of its action on tumour cells would make it preferable thereto.

Conclusions.

1. By means of appropriately managed local injections of formalin into a tumour while it is still growing in the body of a rat, it is possible to damage some of the tumour cells in such a way that their vitality is destroyed without annihilating the antigenic constituent they have been shown to contain. Absorption into the general circulation of the vaccine so produced gives rise to an active immunity which completes the cure of the treated tumour and prevents recurrence.

2. By vaccine treatment of this sort very virulent tumours (J.R.S.), weighing as much as 1/100 of the body-weight, were made to disappear. Of 70 tumour-bearing rats so treated, 54 were cured—i.e., 77 per cent. In the four latest experiments the percentage of cures rose to 96—i.e., 24 animals cured out of 25 treated.

3. Forty-three animals so cured were subsequently inoculated with grafts of the tumour concerned. In only 3 of these did the implant grow progressively—i.e., 40 (93 per cent.) of the rats proved to be immune.

4. It is possible that by pursuing the above line of inquiry a particular reagent yet more effective than either formalin or antiserum may be found. The general principle rather than the individual method is insisted on—namely, that by local treatment of a tumour *in corpore* a vaccine capable of evoking active tumour-immunity can be produced.

It is a pleasure to express my gratitude to Sir Charles Martin, F.R.S., director of the Lister Institute, for valuable advice and criticism. I thank my assistant, Miss A. C. Kohn-Speyer, B.A., for much skilled help, and especially for keeping careful records of all the experiments. By means of their grant to me the British Empire Cancer Campaign have made it possible for me to devote the whole of my time and energy to this research.

THE ZÜND-BURGUET METHOD IN CHILDREN.

BY MACLEOD YEARSLEY, F.R.C.S. ENG.,
CONSULTING AURAL SURGEON TO THE LONDON COUNTY COUNCIL.

THE following five cases demonstrate the value of the electrophonoïde treatment of Zünd-Burguet in cases of deafness in children, which have hitherto been considered as hopeless. The results encourage one to hope that a considerable percentage of the deaf children who, from the failure of all other treatments, have been compelled to receive their education by the usual methods employed for the deaf, may in future be so far restored to hearing as to be fit for education in normal schools for the hearing.

Five Cases Related.

CASE 1.—A. B., aged 16 (born 1910), was "perfectly normal" until five years old, when deafness began after whooping-cough and slowly increased. She was seen by four otologists (all on the staffs of large general hospitals), one of whom removed adenoids, and a second gave as his opinion that the deafness was due to "meningeal trouble." I saw her first in June, 1922, when inquiry into four generations of family history failed to discover any trace of deafness. The family doctor was of opinion that hearing was not entirely lost. Both drums were normal, and there was nothing noteworthy in the upper air passages. On testing, she could hear open vowels with the right and partly with the left ear. She was said to have heard sentences in the loud voice very close to, but I failed to confirm this. Bone conduction for the 35 seconds fork was R. = 12 in., L. = 22 in. By air conduction she heard, R. and L., from I C 64 to C 512—i.e., all in the area of human speech. Galton whistle was not perceived in any part of the scale. I gave it as my opinion that she would have to be educated upon deaf methods, and that an attempt should be made to develop the residual hearing by exercises combined with lip-reading. I saw her again in March, 1926, and found her reactions to tests much the same as four years previously. The Zünd-Burguet treatment was then suggested as—to me at that time—a rather unknown quantity that might be successful in developing her residual hearing, and which could, at any rate, do no harm. The suggestion was accepted by her parents and put in practice on March 8th, sittings being given five days weekly. On March 31st she could hear knocks on the door and the click of the electric light switch. During the whole period of the treatment, save when she returned home for the holidays, she was living with a trained teacher of the deaf. Mrs. Haine and her husband undertook to exercise her hearing, first by vowels, later by sentences. She was tested on April 2nd, two days after the completion of the first 15 sittings. It was then found that she could hear such sentences, spoken in a clear ordinary voice, close to either ear, as "How are you?" "When

do you go home?" "That was a spider." "It is a fine day," &c. Mrs. Haine reported that she could repeat sentences after her husband easily, and less easily after her, and she evidently heard men's voices better than women's. Her voice already showed less of the "dead" quality associated with serious loss of hearing. The treatment was continued until April 23rd, when the first course of 30 sittings was completed. She could then repeat any sentence, however nonsensical, given her at about 6 inches. Her voice was greatly improved. She went home for the Easter holidays, and not only heard her father's voice for the first time for some years, but could hear all he said to her. She resumed treatment on May 11th, and on July 23rd was hearing all sentences regularly at 6 inches as a minimum. On her return from the summer holidays on Sept. 23rd, the report was that she could hear her father at about 50 inches and, for the first time, she repeated my sentences, in ordinary low tones, at 12 inches. Treatment was regularly continued to Dec. 11th. On Oct. 11th she could repeat all that was said to her always at 12 inches with the right, and 8 inches with the left ear, and on one occasion remarked to me: "I hear differently now in the right ear. I really *do* hear." On Nov. 30th she heard a *whisper* close to the right ear. On Dec. 15th my ordinary voice was heard by either ear at a distance of 18 inches. The improvement appeared to be continuous, and she could hear a book read to her at from 8 to 12 inches. She resumed treatment after the Christmas holidays on Jan. 4th, 1927, when it was found that she could hear the slightly raised voice at 6 feet. After an operation on March 26th for appendicitis, her hearing diminished during convalescence, but completely recovered later. Altogether she had 182 treatments. She occasionally, during the treatment, complained of slight aching in the ears, and it was often noted that this occurred before a further improvement. This phenomenon is attributed by Zünd-Burguet to the stretching of adhesions in the tympanic cavity. In a case like this, in which the deafness had existed from early childhood, the daily exercises in speech, already alluded to, formed a valuable adjunct, since she knew words by *sight* only, either as spoken—i.e., lip-read—or written words, and it was necessary, therefore, to educate her in the knowledge of their *sound*. It may be added that Miss A. B. is an exceptionally intelligent girl, and had learned Latin and French by the oral method before she underwent the electrophonoïde treatment. At the time of writing (October, 1927) she has retained her improvement, and will later resume treatment with a view of a further increase of her hearing. Sincere thanks are due to the teacher and her husband.

CASE 2.—C. D., aged 6¼ years. Bilateral deafness for some two and three-quarter years arising in the following manner. At 4 years and 3 months tonsils and adenoids were removed, and as he lay in bed recovering from the anæsthetic his thigh was severely burned by a hot-water bottle left in contact with it by a careless nurse. The burn was extensive, and became septic. He slowly became deaf from this time, and three otologists independently diagnosed the deafness as of auditory nerve origin, and agreed that there was nothing to be done. I first saw him two years and a half later. Both drums were normal in colour, lustre, inclination, and mobility, and nothing noteworthy could be found in the nose or throat. Bone conduction to the 35 seconds fork was R. = 14 seconds, L. = 21 seconds. No loss for low tones. Galton whistle R. = 1·7, L. = 1·5. The whisper was not heard by either ear. Ordinary conversational voice R. = 15 in., L. = 8 ft. Electrophonoïde treatment was commenced Oct. 13th, 1926, and on Nov. 3rd, two days after completion of the first 15 sittings, voice was R. = 3 ft., L. = 8 ft. On Nov. 20th he surprised his mother by hearing her whisper, his face being turned away. On the completion of 30 sittings, voice was R. = 8 ft., L. = 12 ft. Whisper R. = 1 ft., L. = 14 in. Bone conduction R. = 25 seconds, L. = 30 seconds. On Jan. 4th, 1927, he returned for a further 20 sittings, and it was found that he had gone back slightly, voice being R. = 3 ft., L. = 11 ft. Whisper R. = 9 in., L. = 1 ft. This second course was unfortunately interrupted by a severe attack of influenza. On his return on April 26th the hearing was R. and L. = 12 ft. Whisper R. = 10 in., L. = 17 in. A further course of 20 sittings resulted in voice R. = 12½ ft., L. = 15 ft. Whisper R. = 10 in., L. = 16 in. Bone conduction R. = 27 seconds, L. = 31 seconds. I did not see him again until Sept. 19th. His hearing had again retrogressed, and a thorough overhauling by Mr. J. E. R. McDonagh revealed the fact that he is suffering from a definite colitis with resulting chronic intestinal intoxication. He has been placed under treatment, and further electrophonoïde sittings have been postponed for three months.

CASE 3.—E. F., aged 8 years. Deafness after measles in 1925, was very ill for four or five days. Tonsils and adenoids removed three years earlier, and the evidence showed that he had been slightly deaf prior to the operation and had become worse after the measles. Could not hear low tones, such as the buzz of insects, had never heard the cuckoo, but could hear the lark and women's voices. Of general conversation he heard nothing, and had lost the power of listening attentively. Late in speaking and very indistinct up to three years, speech was still slightly defective. Drums showed good lustre and very slight indrawing. Nothing noteworthy in throat and nose. Bone conduction to 35 seconds fork R. = 25, L. = 20. Lowest tone limit R. = 1 C 64, L. = 2 C 32. Galton whistle normal R. and L. Whisper R. = 45 in., L. = 5 ft. On August 24th, 1926, the Zünd-Burguet treatment was commenced. After 15 sittings, whisper R. = 15 ft., L. = 8 ft. After 30 sittings it was R. = 15 ft., L. = 9 ft. This was highly satisfactory, considering that two otologists had pronounced the opinion that treatment was useless, and that he would have to be educated upon deaf principles. On Nov. 9th he returned for a further 20 sittings, when it was found that not only was the hearing maintained, but that in the left ear it had increased another foot. At the end of this course the whisper was over 17 ft. in the right and over 10 ft. in the left ear. Seen on Feb. 28th, 1927, this improvement was maintained, he was reported as doing well at school, but that his hearing varied a little for different voices and he could not always locate sounds. On May 30th I found that the hearing was maintained, and he volunteered that he had heard the cuckoo for the first time. He was not, however, in good general health, and examination by Mr. McDonagh revealed chronic colitis, for which he was placed upon treatment. He is now in sound health, has had no recurrence of the deafness, and is attending an ordinary school.

The results obtained in these three cases impelled me to consider the wisdom of testing the treatment in pupils who, after long trials of the methods established by otological tradition, had been relegated as failures to schools for the partially deaf. After consultation with the deputy inspector of L.C.C. deaf schools, two boys were selected for experimental courses. Both were cases of so-called middle-ear deafness, and the details of their treatment are briefly as follows:—

CASE 4.—G. H., aged 11 years, was first seen Feb. 12th, 1924. He was stated to be deaf, which his mother denied. Mouth-breather, with marked tonsils and adenoids. Very difficult to test, but obviously very deaf. Certified as "hard of hearing," after removal of tonsils and adenoids and other treatment had shown no result. On Nov. 17th hearing for voice was R. = 4 ft., L. = 0. He gradually became worse, and on Feb. 28th, 1927, hearing for the voice was only R. = 2 ft., L. = 0. After 15 sittings of the electrophonoïde treatment it was R. = 3 ft., L. = 0. On the completion of 30 sittings it was R. = 12 ft., L. = 0.

CASE 5.—K. L., aged 12 years. First seen Dec. 4th, 1923. Then had a good voice, and had done fairly well in the infants' school. Drums markedly indrawn, throat and nose clear. His deafness varied. Raised voice was R. = 4 ft., L. = 3 ft. He was certified for the front row of an ordinary class, for revision after six months. This was done with the object of treatment in the interval. On July 1st, 1924, he was obviously more deaf, hearing the loud voice only at 4 ft. Speech was now defective, and he did not appear to have received adequate treatment. Certified for "hard of hearing class." On Feb. 21st, 1927, hearing for the ordinary voice was R. = 2 ft., L. = 9 in., and the electrophonoïde treatment was commenced. After 15 sittings hearing was R. = 2 ft., L. = 1 ft. 10 in. At the completion of 30 sittings it was R. = 2 ft., L. = 2 ft. The improvement in the left ear, although the hearing was more than doubled, was disappointing, but perseverance would probably be attended with more success. I am of opinion that this boy was an example of chronic intestinal intoxication, a condition which has, I believe, a very intimate relation with intractable chronic deafness.

Deductions.

The lesson to be learned from the five cases just described is a very valuable one. They suggest that a considerable percentage of children suffering with progressive deafness are given up as hopeless, once the traditional methods of removal of tonsils and adenoids, with more or less regular inflation have proved useless, when the Zünd-Burguet treatment might give highly satisfactory results. It is not unreasonable to suppose that the first, fourth, and fifth cases of this series—a small series, I admit, but one capable of great extension—could have been saved from the necessity of education on deaf lines by a timely application of the electrophonoïde. Since the net cost of education of deaf children, as compared

with hearing children, according to the London County Council estimates for 1926–27 is, per capitam, as follows:—

	£	s.	d.
Elementary schools	15	7	4
Deaf schools	67	6	2
Partially deaf schools	49	13	1

It is obvious that the introduction of the electrophonoïde treatment into our treatment centres throughout the country would be attended by a considerable saving in the annual public expenditure, once the initial cost of apparatus and the training of operators had been defrayed. It would mean, in addition, a rise in the social happiness and potential civic efficiency of many more of our children. Cases 2 and 3 specially illustrate this latter point. Cases 4 and 5 were experimental, and a continuance of their treatment by this method will probably bring further improvement.

An experience of 20 years' work among deaf children certifiable as deaf, within the meaning of the Act of 1893, has convinced me of the helplessness of otology before a considerable percentage of cases of non-suppurative deafness. I am certain that in many of these cases the electrophonoïde method would give excellent results; an opinion based upon two years' work with the apparatus, and the published papers of Raoult of Nancy, Helsmoortel of Antwerp, Cathcart of London, Ferguson of Jersey, and others.

In cases of chronic non-suppurative deafness, both in children and adults, there are other and more general causes at work than those usually described in text-books of otology, and I would draw attention to the widely different behaviour to local treatment of cases of catarrh of the upper air passages, the effects of which catarrh upon the ears is well known and accepted. There are plenty of cases in which the removal of adenoids and septic tonsils, the correction of nasal abnormalities (as deflected septum), and other conditions in the nose and throat (as chronic sinusites) are attended with excellent results, ranging from fair improvement to complete relief of the aural disability. But there remains a large —I am tempted to say a very large—residue of cases in which, in spite of all traditional treatments, there is progress from bad to worse to final severe chronic deafness. The otologist is often too prone to confine himself in his search for causes to the immediate neighbourhood only of the organ in which he specialises, and therefore fails to detect an underlying general cause. I am only too conscious of the fact that I have myself sinned in this way in the past. What is usually termed "constitutional treatment" is a vague shibboleth of the text-books which, when undertaken, is often merely perfunctory. Recent experience, of which Cases 2 and 3 are illuminating examples, has led me to the opinion that in those instances in which chronic catarrh persists after every treatment, operative, local, and so-called "constitutional," has been tried, the real cause may lie, not in the upper air passages, or the middle and internal ears, but in the intestinal tract.

LEEDS MATERNITY HOSPITAL.—With a bed capacity of 50, this hospital has 75 actually in use, and sometimes further accommodation to the extent of 10 per cent. has to be improvised. A quarter of the births in Leeds occur within its walls. It is now proposed to increase the accommodation to 103 beds, with an isolation block, a new operating theatre, and further room for the nurses and domestic staff.

WALTHAMSTOW, WANSTEAD, AND LEYTON CHILDREN'S AND GENERAL HOSPITAL.—The Duke of York, who was accompanied by the Duchess, recently opened an extension of this institution, which serves a population of over 300,000. The extension increases the accommodation from 50 to 98 beds, including ten private wards for paying patients. The addition also provides a new nurses' home, residential quarters for two house surgeons, a new casualty department, increased accommodation for out-patients, and a new X ray and radiological department. The works have cost £45,000.

NICOLL'S OPERATION FOR FEMORAL HERNIA.

SOME SUGGESTED MODIFICATIONS.

BY ARTHUR EDMUNDS, C.B., M.S. LOND., F.R.C.S. ENG.,
SURGEON TO KING'S COLLEGE HOSPITAL.

MUCH has been written in recent years about the operative treatment of femoral hernia, but most authors treat operations from below with scant consideration, as if they were quite archaic and of no practical value.

The Original Operation.

In 1906 Nicoll, of Glasgow,[1] published details of an operation which, in my opinion, was based upon sound principles in that, after dealing with the sac, he closed the femoral canal by suturing Poupart's ligament to the back of the pubic bone. He also suggested a method of dealing with the sac on the lines suggested by MacEwen for inguinal hernia, but I have not adopted this part of his technique, as it did not seem to offer any marked improvement on the old method of transfixion and ligature. I have, however, performed his osteofascial suture for over 20 years and have, I venture to think, found out for myself a few points in which his original methods may be improved.

My habitual procedure is as follows. A curved incision is made, as recommended by Sir Watson Cheyne, and a flap turned inwards, exposing the sac and the lower part of the external oblique. The sac is dealt with in the usual manner; it is allowed to slip back, and any tags of retroperitoneal tissue which are present are pushed back through the femoral canal. The anterior surface of the pectineus can now be quite easily exposed by stripping a little loose areolar tissue from its surface. The vein is held out of danger to the outer side, and the point of the knife is passed through the fibres of the muscle down to the bone; by cutting the muscle from without inwards the horizontal ramus of the pubis is exposed for about an inch. The problem which now presents itself is that of drilling two holes through this bone.

Drilling the Bone.

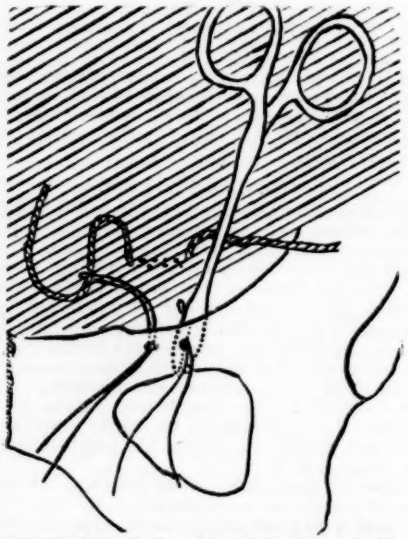
I have used many types of drill, but all had the disadvantage of penetrating the compact bone on the deep aspect of the pubis with a disconcerting jerk. I have never wounded anything, but I have had some anxious moments. Nicoll used a tongue depressor to protect the deep structures, passing it through the femoral canal to the deep side of the bone. This is, however, rather large for many cases, and I have generally used my finger. It is usually easy to feel when the drill is coming through, but at times the finger is in danger. Recently I have overcome this difficulty by using an ordinary carpenter's gimlet, which is passed through the bone without any appreciable pressure by simply turning it round and round. This tool as sold consists of a metal part riveted into a hard wood handle. These are fastened together by expanding the metal portion over a washer, after it has been passed through the wooden handle. A few touches with a file will remove this expanded portion, and the metal part will come away with a nicely squared shank, which fits into the ordinary chuck drill-holder that every instrument-maker sells. In addition to the gimlet, two pieces of annealed iron wire are required. These should be about 18 inches long and about as thick as the wire used to tie down champagne corks. They must be doubled in half and the loop thus formed crushed almost flat between the blades of a pair of artery forceps.

Having exposed the bone, the surgeon passes his forefinger to the back of the pubis, into the loose areolar tissue above the attachment of the pelvic fascia, which is not here attached to the margin of

[1] Ann. Surg., 1906, xliii., 114.

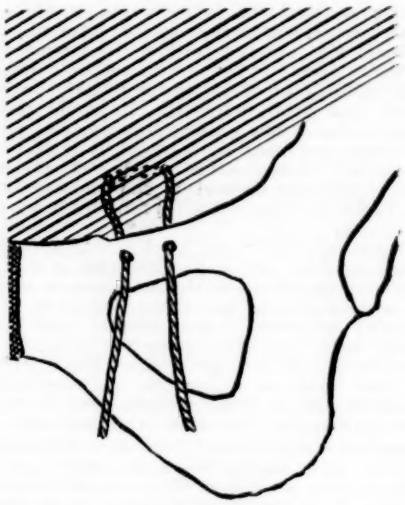
the pelvis, an anatomical condition which greatly facilitates this operation. If the femoral canal is too small to admit the finger readily there need be no hesitation in dilating it, as the subsequent stages of the operation will close it quite efficiently. The bone is now bored through in an upward direction with the gimlet, the point of which can be easily felt as it comes through the bone. When the gimlet projects well through all the blood is carefully mopped from the depth of the wound and the gimlet withdrawn. Before the field of operation has become obscured by fresh oozing, one of the loops of wire is passed through the hole in the bone and drawn up into the wound by means of a pair of artery forceps, introduced through the femoral canal. A few tags of retro-peritoneal tissue are often brought up also, but these are easily returned into their place. This procedure is repeated with the other loop of wire. A large needle threaded with very stout silk is now passed through the tissues above Poupart's ligament, picking up not only the external oblique but some of the fibres of the deeper muscles, and including in its grasp the upper and outer part of the internal pillar of the external abdominal ring. The needle is now unthreaded and each end of the silk suture passed through the corresponding wire loop. By pulling on the loops the silk suture is drawn through the holes in the bone, so that there is now a strong mattress suture passed through bone and abdominal wall. By pulling firmly on the two ends of this suture it is possible to draw Poupart's ligament and the structures in immediate relationship with it to the back of the pubis. It is not enough to rely upon the parts being brought into apposition by tying the silk suture; there is so much friction over the rough surface of the holes in the bone that unless the parts are brought into apposition by pulling on the suture, a gap will be left which will not satisfactorily close the femoral ring. It will be obvious, therefore, that strong silk must be used, and although I have always used very thick silk, I have never had to remove it subsequently. Indeed, one strangulated case suppurated slightly without the stitch giving any trouble.

FIG. 1.



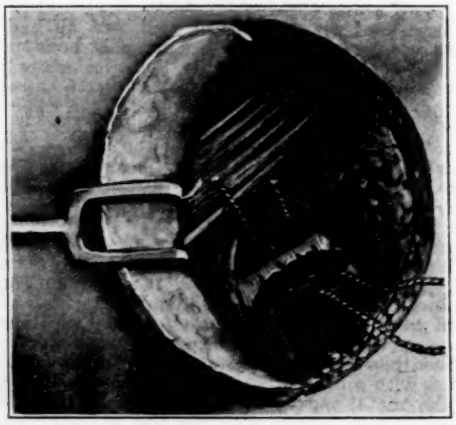
Suture passed through the abdominal wall and through the inner wire. The outer wire is shown grasped with the artery forceps by means of which it is to be drawn up.

FIG. 2.



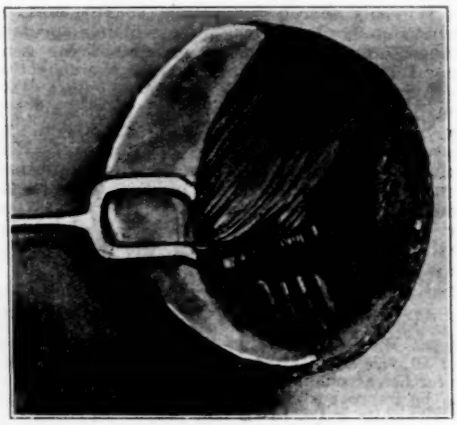
The suture passed.

FIG. 3.



The same stage as Fig. 2 shown in more detail. The ligatured sac is shown diagrammatically, but this should slip out of sight.

FIG. 4.



The operation completed.

Suturing.

I advise that the inner pillar of the external abdominal ring should be included in the stitch because I have seen an inguinal hernia follow this operation, and I believed that this was caused by the forcible dragging open of the inguinal canal. If it is not convenient to take in the inner pillar a few supporting sutures should be inserted uniting the pillars.

The points at which the bone is drilled must be selected carefully, so that when the operation is completed the femoral canal will be efficiently closed without any undue constriction of the vein. In very large rings I have put in two mattress sutures of this kind, or one mattress suture and a simple suture going once through the bone and picking up Poupart's ligament. When the suture is tied the wound can be closed as soon as any superficial bleeding has been dealt with. There is no need to suture the pectineus, as only its middle fibres have been divided. I am in the habit of incorporating a marine sponge in the dressing, an old-fashioned plan introduced, I believe, by Lister, which should be used more often than it is, for there is no difficulty in sterilising sponges, even though they cannot be boiled. In the bandage I like to incorporate one or more knotted turns, like the wool truss used by some people for babies.

Nicoll's method, in my opinion, deserves to be more widely used, and I hope that these modifications which facilitate the operation will make this most useful procedure more popular.

Clinical and Laboratory Notes.

A CASE OF

PULMONARY INFARCTION COMPLICATING ENTERIC FEVER.

BY RICHARD MASSINGHAM, M.R.C.S. ENG.,
RESIDENT MEDICAL OFFICER, LONDON FEVER HOSPITAL.

THE following case has recently come under my observation:—

The patient, a man of 44, was admitted to the London Fever Hospital under Dr. C. R. Box on June 2nd, 1927. His illness had started, in the early part of May, near the Red Sea, with an ordinary febrile attack. He had returned to England on May 10th, and had remained more or less ill ever since. Apart from general malaise, slight headache, and occasional diarrhœa, the most striking feature was a severe naso-pharyngeal catarrh; from this, however, he had suffered for some years. There had been some dirty muco-purulent sputum which was slightly streaked with blood. There were no definite physical signs in the lungs apart from a few crepitations at both bases. On May 30th the spleen became definitely palpable, and on the following day a rose-pink papular eruption was well marked. Although two blood examinations had proved negative, a diagnosis of enteric fever was made and the patient was transferred to hospital.

For this history I am indebted to Sir Charlton Briscoe and Dr. C. E. Lakin, under whose care he was before admission.

When first seen the patient looked very ill, with temperature 104·6° F., pulse 92, and respirations 20. The tongue was dry and coated, the abdomen moderately distended, and the spleen just palpable. Several rose-pink spots were present on the back and front of the chest and abdomen. Examination of the chest showed a few crepitations and scattered rhonchi over the lower half of the right chest and the base of the left lung. A Widal reaction now showed *B. typhosus* to be agglutinated in a dilution of 1 : 2000; paratyphoid group negative. The patient, apart from a general feeling of malaise, complained chiefly of a troublesome cough and the expectoration of blood-stained muco-purulent sputum, examination of which showed the predominant organism to be a hæmolytic streptococcus with no typhoid or tubercle bacilli.

During the first three days in hospital the sputum became more heavily blood-stained, and the patient had two rigors, the temperature on one occasion falling to 96°. On June 6th he complained of pain in the right side of the chest. Examination showed imperfect movement on the right side, a dull percussion note over the lower lobes, a normal vocal resonance, and a friction rub, heard best just below the axilla. The patient was then expectorating almost pure blood, with temperature 102°, pulse 100, and respirations 30. On the physical signs and symptoms a diagnosis of pulmonary infarction was made. A careful examination of the body showed no evidence of arterial or venous thrombosis.

For the next three weeks, except for a slight but steady rise in the pulse-rate, the general condition and physical signs remained almost stationary. The temperature remained at the steady level of 102°–103° in the evening, with morning remissions of 2° or 3°, while the respirations remained about 30. By June 29th, however, the apex-beat had moved half an inch outside the nipple line, and the breath sounds had become fainter, although the vocal resonance and fremitus were still almost normal. Pus withdrawn by an exploratory puncture yielded typhoid bacilli.

On the following morning Mr. Maynard Smith resected a portion of the sixth rib, let out about three pints of pus, and inserted a large drainage-tube 5 in. long. For the next few days the pleural cavity was irrigated in the usual way with eusol until the washings were returned clear. About five pints were usually needed. During the wash-out on July 9th the patient suddenly became cyanosed and collapsed, and expectorated some sputum smelling heavily of chlorine. Apparently a communication between the lung and the pleura had been established. Eusol could, therefore, only be used in small quantities at a time. To keep the pleural cavity as clean as possible, a long small bored tube was stitched into the drainage-tube and then brought outside the dressing, so that, without disturbing the patient, small quantities of eusol could be injected day and night into the pleural cavity and allowed to drain into the dressing. Even then the patient sometimes complained of a taste of chlorine in his sputum.

During the next fortnight the general condition improved, the temperature started to fall, and the pulse-rate became slower. On July 21st, however, the patient during a fit of coughing expelled through the empyema opening a strip of lung 5 in. by 1 in. by 1 in. He said he felt "something give way," but beyond a little breathlessness his condition remained unaltered. Dr. J. Bamforth, who kindly sectioned a portion of the specimen for microscopical examination, reported that the blood-vessels were thrombosed, and the tissues had undergone coagulation necrosis. The temperature finally became normal on August 7th, and the tube was discontinued a week later. The patient was allowed up on August 23rd, and discharged from hospital on Sept. 27th.

During the last month in hospital the upper lobe of the right lung had expanded almost completely, and the air entry into the lower lobes had considerably increased. Diminished movement of the right half of the diaphragm was all that could be seen by a screen examination, while an X ray plate showed a small opaque mass in the lower lobe (apparently a scar) to which the diaphragm was attached.

So few are the recorded instances of pulmonary infarction in enteric fever that it must be considered rare. The references are confined to a few lines, with no mention of the time of onset, treatment, or prognosis, and appear to be the results of post-mortem examinations. Dr. Sidney Phillips recorded at the Clinical Society in 1905 a case of typho-pneumonia, where small hæmorrhagic infarctions were found microscopically scattered throughout the lungs.

H. Vincent and L. Muratet, in their book on typhoid and paratyphoid fevers, state that although the *Bacillus typhosus* may be present in the lungs, it is rare to find it in the sputum-cup; and it is of interest to note that in the case described above the bacillus was found in the pus from the chest but not in the sputum.

The complication of broncho-pleural fistula considerably increased the difficulty of washing out the pleural cavity, but the necessary alteration in treatment was one of degree and not of kind. The question of prognosis, however, presented great difficulty, since pulmonary infarction from any cause has a high mortality.

I am indebted to Dr. C. R. Box for permission to publish this case.

A NOTE ON
TWO UNUSUAL CASES OF FEVER.

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WITHIN the past two years I have seen two cases of obscure fever which presented several points of interest. They had almost exactly similar symptoms, and the disease in each case ran a very similar course, so that a detailed description of only one will be given.

The patient was a man aged 36, who, except for a holiday in Norway and Switzerland for winter sports two years previously, had not since been abroad. He was taken ill with malaise, pain in the limbs, headache, and sweating. For the first week he thought he had an influenzal attack, and went about his business without consulting anyone. Soon he became so weak that he went to bed and sought medical advice. When first seen he had a coated tongue and it was noted that his temperature rose very regularly to about 101° F. at about 5 P.M., after which he sweated profusely. He was very thirsty and was constipated. The liver and spleen were not enlarged. Fifteen days from the initial symptoms the fever subsided and he made an apparent recovery, though he still complained of headache and considerable lassitude. He was then vaccinated against small-pox, as there had been a case locally. The vaccination took successfully, and he appeared to be recovering, when, eight days from the fall of temperature already noted, he had a return of the fever and sweating. Pains in the joints were especially marked, and there was swelling of several of the larger joints, which quickly subsided. At this point a tentative diagnosis of an enteric infection was made, and some blood sent to me for agglutination. It proved to be negative to the enteric group of organisms. About this time I saw the patient myself, and further investigations were made.

The blood picture was as follows: red cells, 5,100,000; hæmoglobin, 82 per cent.; leucocytes, 5200; polymorphs, 39 per cent.; lymphocytes, 52 per cent.; and hyalines, 9 per cent. The blood on culture proved to be sterile. Nothing abnormal was found in the fæces either microscopically or on culture. The urine contained one or two pus cells, but was sterile. A faint trace of protein was present. His serum agglutinated *Micrococcus melitensis* up to a dilution of 1/400, 1/800 being negative; the serum was put up both heated at 55° C. for half an hour, and unheated, and the same result was obtained in each case. On further inquiry no history of any abortion amongst cows was obtained either at the farm that supplied the patient with milk or at any other farms in the district. In the present case this negative evidence is reliable, since the patient lived in a small country town, and it was easy to trace all the milk supply. No goat's milk had been taken. Unfortunately no cultures of *Bacillus abortus* were available at this time, and by the time I had obtained these the patient refused to be bled again.

The fever continued altogether for about two months, slowly subsiding, but a considerable degree of weakness was left, and as the patient went on a long sea voyage it was impossible to get again in touch with him. He was treated with intramuscular injections of nuclein, though these appeared to make little difference to the course of the disease.

The second case, seen two years ago, in the middle of 1925, was almost exactly similar in every respect; the patient had never been abroad, the same end-point for agglutination against *M. melitensis* was obtained, and the other negative findings. This patient, however, made a more rapid recovery, and was well, except for very slight lassitude, in a month. At that time the prevalence of *B. abortus* in cow's milk had not been recognised, and no effort was made to test the serum for agglutinins to this organism.

In view of two very similar cases recently published by J. Bamforth,[1] one would suppose that in these two cases the fever was due to infection by *B. abortus*, and it is regretted that no more precise investigations could be made. Further, it seems probable that if a due consideration of the history and clinical condition could be always obtained by the clinical pathologist performing the laboratory investigations, more cases of obscure fever might be found yielding indications of being undulant fever. There is no question but that these two cases were clinically quite characteristic of this disease. The further point that arises, however, is what importance is to be attached to a positive agglutination against *M. melitensis* in a dilution of 1/400. Is this sufficient in cases of this type to justify a diagnosis of undulant fever?

[1] THE LANCET, 1927, i., 819.

A NEW SITE FOR ONCHOCERCA VOLVULUS.

BY N. A. DYCE SHARP, M.R.C.S. ENG.,
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Onchocerca volvulus, both male and female, have hitherto been found only in subcutaneous tumours, and these tumours are still regarded as the sole characteristic of infection by this worm. Yet the tumour palpable beneath the skin has never been found in more than 50 per cent. of those persons who exhibit the larvæ in the skin. In actual practice it is found that of 100 persons who show a skin infection with embryos of *O. volvulus*, only 30–40 will have tumours which are palpable even after prolonged search. The commonest sites for these little tumours are over the ribs in the axillary line, over the anterior superior spine of the ilium, and over the great trochanter of the femur. They may, however, be found in any region rich in lymphatics, and the ankles, elbows, knees, and even the scalp may at times be selected. It is clear, therefore, that the visible or palpable nodules under the skin are not the only sites in which the parent worms can lodge, copulate, and reproduce their young. For if only 40 per cent. of persons exhibiting embryos in the skin have subcutaneous nodules containing the parent worms, in the remaining 60 per cent. the adults *must* exist in the deeper tissues. But they have never been found there.

In the case here recorded no nodules could be detected after prolonged and repeated examination, but the volvulus embryos were present in a fragment of skin removed from the back.

The patient was admitted to hospital with an ulcerated foot, resembling a Lisfranc amputation, which had suppurated for months. He was unable to describe how he came to lose the front half of his foot, and it can only be surmised that it was due to yaws, which is often fairly painless in its mutilations. After a few days the ulcer became cleaner and showed signs of healing with injections of novarsenobenzol. At this time the "amputation" stump was covered with granulation tissue, and none of the fragments of the metatarsal bones were visible. Boric fomentations were applied twice daily, and when removed were usually dry. The dresser to the case noticed, however, that there was always one spot which was wet. It was then observed that at this point, almost in the centre of the wound, there was a drop of milky fluid, and a slender thread, half an inch long, was extruded. For several days the dresser had been dragging on this thread and removing as much as possible. It proved to be part of a female *O. volvulus*, and from the portion removed numerous embryos made their escape into the saline in which it was placed. The worm could not be extracted whole, but half to one inch continued to be extruded for several more days. It was estimated that about eight inches of worm was removed piecemeal.

Owing to the condition of the parts it was impossible to identify the exact locality from which the worm emerged, but in a normal foot it would have been below the second and third metatarsal in the fibres of the flexor brevis digitorum.

This case is also interesting because the presence of the worm in the centre of the wound, continually ejecting larvæ, appeared to have no deleterious effect on the general healing process, which proceeded normally. It resembled, in fact, the behaviour of *Dracunculus medinensis* in everything but this, and it might well have been confused with this worm had it not been for the microscopical findings.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

A MEETING of this Section (to which members of the Medico-Legal Society were specially invited) was held on Dec. 8th, under the chairmanship of Prof. EDWIN BRAMWELL, the President, and later of Dr. GORDON HOLMES. A discussion on

TRAUMATIC NEURASTHENIA AND THE LITIGATION NEUROSIS

was opened by Sir FARQUHAR BUZZARD, who said that the subject was one which had produced much confusion in the minds of doctors as well as lawyers. All knew, he said, the clinical picture of the worried patient, complaining of insomnia, dreams, pressure-headache, depression, giddiness, phobias, and loss of memory and concentration. He submitted that this condition was a mental disorder, an anxiety neurosis following an accident for which someone else was responsible. It was just as likely to appear in the absence of any physical lesion, and indeed rarely developed after serious physical injury. It did not follow hunting accidents, for which only the rider or his horse was responsible. It might be encountered after injuries to any part of the body, but was common after blows on the head or spine, because these were associated in the lay mind with terrible disablement. An important ætiological factor was the fright produced by the accident; this was unfortunately disguised under the term "shock." The neurasthenia in workmen's compensation cases was often the cumulative result of many small factors and of suggestions from friends, especially if the victim were at the age when his value in the labour market might soon decrease. To the lay mind trauma was still the most important universal ætiological factor in medicine, just as it was in the medical text-books of 50 years ago. The psychopathological factors concerned in the production of traumatic neurasthenia were: fear at the time of the accident, anxiety as to possible consequences to health, the subconscious desire to safeguard the future, the sense of injury, the knowledge that the responsibility for the accident lay on somebody else's shoulders, the ignorant interpretation of symptoms, the injudicious remarks and advice of doctor and friends, and the worry of litigation. Whether or not this mental disability could be legally regarded as a result of the accident was a question that had aroused some doubt in judicial minds. A lawyer's letter had put it thus:—

> "The employer's case is that the man's inability to work is caused by brooding over the effects of the accident, and that he is suffering from weakness of will and a fixed but erroneous idea that he is a chronic invalid. If they establish this proposition then the court would have power to refuse further compensation. If, on the other hand, this man is suffering from neurasthenia, as we are advised, he is then entitled to a continuance of the compensation."

To Sir Farquhar Buzzard's mind, however, the alternative diagnoses therein offered meant one and the same thing. The problem was important, both economically and ethically, and the solution did not lie entirely with the lawyers. If doctors took as much care to prevent infection of the patient's mind with insidious and morbid ideas as they did to prevent infection of his physical wounds, the seeds of traumatic neurasthenia would rarely be sown. Doctors obscured the issue by talking about shock when they meant fright, and by treating established neurasthenia with a weekly bottle of medicine and the advice to take outdoor exercise. Were it practicable for the law to refuse to recognise mental disability traumatic neurasthenia would soon become very rare. The practical difficulty of diagnosis and the conflict of medical evidence would, however, remain. The difficulty would never be satisfactorily settled until diagnosis were submitted to medical instead of legal jurisdiction. If, on the other hand, the law regarded the accident as responsible for all subsequent disorders of the mind, the workman who brooded over his injury and harboured erroneous ideas of chronic invalidism would be as justly entitled to prolonged compensation as the sufferer from traumatic neurasthenia.

The Lawyer's Point of View.

The Right Hon. H. P. MACMILLAN said that the problem was on the borderline of law and medicine, and was of peculiar interest. It was part of the daily routine of a judge to determine what was and what was not the direct consequence of a wrong or tort or accident. The legal doctrine applied was the "doctrine of remoteness." That task of discrimination had constantly to be made in almost every department of commerce. In this instance the plaintiff would have suffered, possibly, no direct physical injury, but a pathological state of mind had supervened which would not have supervened but for the occurrence. It was a consequence of the occurrence because of the mental habit of the patient, who, through want of robustness or some other reason, had proceeded to brood over the occurrence and had created a "grievance complex." He had actually contributed through his own deficiencies to the creation of the state of mind that was pathological. Lawyers had to be rough and ready; the foot-rule of the law was not very delicately adjusted to measure electrons and ions. The law was not and never could be an exact science; it had to get on with its business. A very good criterion was ordinarily applied by the courts. Any person could recover damages in respect of a breach of contract or tort when the consequences were the "natural and probable consequences of the occurrence." This was easy to formulate, but in practice was often difficult to apply. The law said that, if a person chose to assault a fellow citizen, he must take his chance of that citizen's having a peculiarly thin skull, so that the consequences of the assault might be unexpectedly serious. That was very good common sense. In the same way railway companies must take their passengers as they found them, including their previous dispositions, peculiar characteristics, and mental outfit. The law said that a chain of consequences might be broken by the introduction of a new cause—"novus actus interveniens." If the patient's condition were due to the subsequent introduction of a new element the patient himself doing something, then the law would hold that the consequences were not directly and naturally attributable to what the railway company had done. The task was always, therefore, one of discrimination. The function of the doctor lay in assisting the court to determine whether or not in any given case the symptoms could or could not be described as "natural and probable consequences of the occurrence"; at that point medical men could make a great contribution to the course of justice. The honest expert witness was indispensable for the administration of justice. Evidence of opinion was absolutely unallowable in ordinary matters of daily life, but where judge or jury might not be presumed competent to draw inferences—e.g., in the realms of science, skill, or art—expert evidence of opinion was welcomed from assessors, referees, or the expert witness in the box. The real vice of the situation at present was the theory that had grown up that the expert witness was in any sense an advocate. He was nothing of the sort, and he ought to give his unbiased view honestly and sincerely, without fear or favour. The scandal—if scandal there were—of the conflict of medical evidence had largely arisen as the result of this misconception of the rôle of the expert witness. The court was entirely at the mercy of the medical evidence put at its disposal; it was a fundamental principle that the judge proceeded entirely on the evidence put before him, and not on his own opinion. A very high responsibility, therefore, rested on the medical expert. The original crude view of the law had been

that unless the victim could show a definite physical lesion he had no claim. The law had now advanced beyond that point, and was learning to note the finer shades of medical opinion, but it would never be possible entirely to reconcile the medical and legal points of view. The former was necessarily scientific and exact, the latter was neither. Mr. Macmillan was not sure that it would be right to delegate the question of consequence to a body of medical men not subject to cross-examination. It was better for cases to be decided by rough justice than to drag on interminably. The problem was one of cause and effect, and he would prefer that it should be settled by a court of law with the assistance of expert testimony.

Sir JAMES PURVES-STEWART distinguished between traumatic neurasthenia and litigation neurosis. The former was a bona fide medical illness, the latter was a legal complaint—in both senses of the word. In the courts they tended to overlap, but an effort should always be made to differentiate them. Many a straightforward medical affair became contaminated with the toxins and antitoxins of the law. Litigation neurosis might be compared with an innocuous drink to which various exciting ingredients were added at the Bar, so that the resulting cocktail was both interesting and expensive. When the Workmen's Compensation Act became law it soon became evident that the average duration of disability after simple injuries had risen considerably. Modern education had broadcast the glad news of "traumatic neurasthenia," and everybody had heard of the victim of a railway accident who, on being asked if he were hurt, replied: "I don't know until I have consulted my solicitor." Nervous symptoms after accidents were of two kinds: (1) actual physical injury, concussion, or commotion to the nervous system, clearing up under treatment in a few days or weeks, in the absence of an atmosphere of litigation; (2) nervous symptoms due to the expectation of financial solatium, real enough to the patient but produced by the novus actus interveniens—viz., suggestion. Commonly the production or persistence of symptoms was unconscious, and the patient gradually built up a compensation hysteria persisting so long as hope of pension or grant remained. This neurosis was not really the result either of trauma or of fright, but resulted entirely from the suggestions of outside people. Medical treatment was of no avail, but as soon as the case was settled it became unnecessary. Of 17 cases recently investigated 10 had disappeared from medical care immediately after the verdict and six had left definite records of prompt return to work. The remaining case had drawn disablement pay for five and a half years and then had lost his pension, whereupon he had calmly resumed work. A pension was a worse form of compensation than a lump sum, for the patient had to "earn his pension."

Dr. RISIEN RUSSELL said that there was no more difficult problem in medicine; he had always wished that there might be medical assessors rather than expert witnesses on opposite sides. The picture so typical of litigation neurosis was also encountered in private practice apart from compensation. The medical man representing the Company was sometimes to blame, as well as the solicitor and friends of the patient. Dr. Russell had seen incredulity, brusqueness, and once even brutality in the way in which this doctor approached claimants. Such behaviour aroused fear of being "done down" and exaggeration of symptoms, and also stimulated the protective instinct of the family doctor, so that the seed sown by the solicitor was nurtured. Physical signs associated with traumatic neurosis were tremor and exaggeration at first, and later marked diminution of the tendon-jerks. The consequences of shock were worse in old people, and arterio-sclerosis often came into the picture. Ultimate mental and physical deterioration might follow accidents where there was no question of litigation. The victim of a fall in the hunting-field, moreover, was free from the financial anxiety which played an important part in the production of traumatic neurasthenia. Dr. Russell pleaded for consultation between the medical officers of the two sides; this would save much litigation.

Dr. W. A. BREND said that the number of cases referred to him as referee under the Workmen's Compensation Act had shown an extraordinary decline in recent years. This indicated that compromise out of court was increasingly common, probably because both sides realised the potential pitfalls and the difficulties of representing a case adequately, and also because of the belief that prompt settlement would lead to rapid recovery.

He quoted the case of a workman who had fallen from a ladder and developed traumatic neurasthenia. His medical witness had given evidence badly, while the doctor appearing for the employers had carried all before him and roundly declared that the man had tabes, describing the absent reflexes, &c. So effective had he been that plaintiff's counsel had accepted the fact of tabes and based his case on the argument that the accident had accelerated or accentuated the disease. Dr. Brend had taken an opportunity to examine the man and had found his knee-jerks and pupil reflexes normally present. He communicated his finding to the judge, who was thus placed in a most difficult position, for no evidence had been brought against the existence of tabes. "From a legal point of view," said his lordship, "he has locomotor ataxia and he has got to have it." The learned judge had finally persuaded counsel to reach a settlement without calling on him for judgment.

The Ministry of Pensions had experimented carefully with the "lump sum" treatment of war neurasthenics, but so many of the men had returned, in spite of receiving a final compensation, that the method had been discontinued as a failure. Removal of anxiety was not sufficient to clear up war cases, but they were men who had had a very bad time and there were not many of that type in civil life. It was doubtful if the term "traumatic neurasthenia" could rightly be applied to those cases whose symptoms disappeared on receipt of compensation.

Dr. W. SALISBURY SHARPE divided traumatic neuroses into: (1) functional paralyses; (2) functional or hysterical contractures affecting a limb to which there might only have been the slightest injury—the contracture might show a tendency to indefinite spread; (3) liability to true hysterical or hystero-epileptic seizures; (4) definite persistence of a symptom long after complete reparation had taken place; (5) alleged spread of symptoms, especially pains and paræsthesias, to the opposite side or to other regions beyond the injury; and (6) psychoses. Lawyers spoke of shock in a way that showed great lack of appreciation of its medical meaning. True surgical shock greatly diminished suffering, both mental and physical. Most of the neuroses after injury were the effects of fear. The worst case of shell-shock he had ever seen had been in a man who had never been nearer the war than Plymouth. An important sign, and sometimes perhaps a cause of traumatic neurosis, was sugar in the urine; a modified diabetic treatment sometimes benefited the nervous symptoms. Endocrine disturbance, usually hyperthyroidism, might also be present. Fear was an ætiological factor both in diabetes and in Graves's disease. Litigation neurosis was occasionally fostered by doctors. He had rarely seen real "advocacy" in an expert witness; what was sometimes mistaken for it was the fact that medical men might honestly come to different opinions.

Sir WILLIAM WILLCOX spoke in favour of the final decision being left to judge and jury.

Sir FARQUHAR BUZZARD, in reply, again asked that the legal mind should decide where the responsibility for the whole train of effects lay. He did not think the Ministry of Pensions cases comparable with those he had described, as so many other factors came in.

Mr. MACMILLAN, in reply, said that all professions were apt to require from other professions a degree of exactitude of which they were not themselves capable. It was not possible for a lawyer to answer Sir Farquhar

Buzzard's question categorically, or to prescribe a formula for attributing responsibility. All the lawyer could do was to proceed on the evidence, and so hand the ball back to the doctor. He submitted that there was no true distinction between the physical and the psychological. The pathological psychological state, if all were known, would be found to be associated with some kind of undetected physical injury in the region of the brain. The discussion might aptly be concluded with the legal phrase: "Cur: adv: vult"—"The court will take time to consider judgment."

SECTION OF ORTHOPÆDICS.

AT a meeting of this Section held on Dec. 6th, Mr. W. ROWLEY BRISTOW, the President, being in the chair, a discussion on

FRACTURES OF THE SPINE.

was opened by Mr. GEOFFREY JEFFERSON (Manchester). Injury to the head was, he said, very important as a cause of cervical fracture or cervical dislocation. Direct violence to the spine was always an uncommon cause of vertebral disruption, and most spinal injuries were caused by force applied at a distance from the spine. If the injuring body was hard, and particularly if it struck at high velocity, a fracture of the skull would result and the full force of the injury would be absorbed by it. If, however, the wounding object was soft and very heavy, the spine—particularly its cervical portion—would be the part to sustain injury. In rare cases the head might be "mushroomed" down on to the spine, and then a ring of bone was driven around the foramen magnum up into the skull. Usually the bone in this area offered resistance, and if the skull failed to break elsewhere, the force acted on the spine. Perhaps in that case the atlas would be broken, or possibly some lower vertebra.

Mr. Jefferson explained that the vertebral column consisted of two parallel fused cylinders, of differing structure and purpose. The anterior consisted of the vertebral bodies and intervertebral discs, and its general purpose was to support weight. From the neural arches a number of transverse and spinous processes were thrown out, their chief purpose being to allow of muscular attachment. If the spine was violently compressed from above, the anterior pillar gave way more rapidly than the posterior, because of its spongy bone and the intervertebral fibro-cartilages. For this reason flexion followed immediately on compression. The neural arch contained a considerable cancellous element. The tendency of the vertebral column to flex when compressed was aided by the protective reflex described by Magnus, by which any unexpected touch on the head caused the person to bend forward suddenly and involuntarily. Flexion of the neck alone by a strong moving force applied to the head would result in a dislocation, roughly at the junction of the middle and lower thirds. If the neck remained upright and the head itself was violently extended or flexed, a common result was a fracture of the odontoid process. Violent extension was a much more uncommon mechanism of spinal injury than flexion, and introduced the question of torque fractures of the pedicles. Sometimes severe injury followed slight movements, as in the case of a woman brushing her hair, or in diving. Kimmell's disease, which was described before the days of X rays, was a wedge compression fracture, a so-called spondylitis traumatica.

With regard to treatment, he said, the ideal always in the mind of the surgeon was reduction, but the cases one most wished to reduce were the hardest to deal with in that way. Most orthopædic surgeons seemed to have formed the opinion early in their career that they would have fractured spines with cord injury by operation, but the resultant mortality had cured their optimism. In a series of 85 patients, 18 died, 16 of them in the first week, and he was sure that none of those would have been saved by operation. Therefore operation should only rarely be undertaken, and only in cases in which pressure could be proved to exist. The general surgeon often erred because he was so apt to regard every case of fracture of the spine as a case of pressure. It was impossible to know from the skiagram what cases sustained damage to the cord.

The Neurological Standpoint.

Dr. GEORGE RIDDOCH said that all would agree that the more important consideration in these cases was as to whether or not the cord had been damaged. The crux of the matter, therefore, was, what to do if the cord was damaged, and he considered the subject largely from this attitude. The most common hæmorrhagic disturbance was the distribution of minute hæmorrhages in the cord in the region of the injury. Part of the disturbance of function in cases of spinal injury was transient and physiological, due to œdema, &c., and only part was the result of permanent structural defect. In the final stage of severe cases sepsis usually played a part, but even these patients might live a long time. Cadwallader had had a patient who lived 23 years after she broke her back. It was often a difficult problem to decide what was the exact level of the main spinal injury. Diagnosis of this depended on three groups of changes: sensory, motor, and reflex, the sensory being the most valuable. Hæmorrhage outside the cord did not cause spinal compression. Indriven fragments might look like a tumour in the skiagram, and if they caused pressure symptoms it was only in a passive way, and they did no more than cause fibrosis or a local encystment of spinal fluid. Under no circumstances should operation be done in these cases during the period of spinal shock—i.e., not within two to six weeks after the injury. After this period the indications for fairly early operation were: (1) the presence of gross bony deformity; (2) an arrest in the recovery process or an increase in the symptoms after a latent period; and (3) the presence of severe, persistent root pains. Operation should not be attempted if the cord was found to be completely divided by gross displacement of vertebræ and if there was failure of conductive power. There was more justification for operation when late paralytic troubles supervened, such as progressive meningitis circumscripta serosa, with increasing root pains spreading upwards and downwards.

Discussion.

Dr. BERTRAM SHIRES, speaking as a radiologist, urged the routine skiagraphy of all cases of injury, not only for ordinary diagnostic purposes, but from a medico-legal standpoint. So frequently when a case came to court no radiogram was available, when that would have been a vital factor in the decision.

Dr. GEORGE STEBBING gave an analysis of cases of spinal injury in the Lambeth Hospital, remarking that there had recently been a steady increase in this class of case, probably due to street accidents being more common. Of 32 cases admitted in the last three years, 14 had gross injury to the spinal cord. Five of them died in hospital, one 50 years after the injury, one 122 days after the injury, and others eight, two, and one day after being injured. Only a minority of spinal fracture cases were associated with gross nerve lesions. The decompression operation had not proved of value in the series he had come into relation with. He had never seen a case of this kind die of bedsores or pneumonia; the great factor in the final stage was pyelonephritis, which was very difficult to prevent.

Mr. THOMAS OPENSHAW agreed that in most cases of spinal injury the final factor was pyelonephritis. Prolonged immobilisation was essential for the recovery of many of these fracture cases. Stereoscopic skiagrams should always be taken. The orthopædic surgeon should especially be au fait with cases of injury of the spine in which there were no nervous symptoms. He related some interesting cases of his own.

Mr. ST. J. D. BUXTON showed skiagrams of a number of cases of his own which had presented problems in diagnosis and treatment. In regard to treatment, apart from reduction, he said, three things had impressed him: (1) the condition of the patient's respiratory system, (2) the abdominal condition, (3) the presence of sores. In cases which showed a prospect of recovery, the condition of the bladder should receive special care. He feared that was not always the case.

Dr. J. F. BRAILSFORD also showed a series of skiagrams of cases of spinal injury, deducing the lesions of each.

Mr. J. EVERIDGE concentrated on the seriousness of the urinary symptoms in spinal injury. Early catheterisation very often introduced sepsis. Sir J. Thomson-Walker had laid stress on the value of early suprapubic cystotomy, and the speaker thoroughly agreed with him.

Mr. BERNARD ROTH concluded the discussion by describing skiagrams of two cases in his own practice.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society held on Dec. 12th Mr. HERBERT W. CARSON, the President, occupying the chair, a discussion on

INSOMNIA

was opened by Dr. EUSTACE CALLENDER, whose address we publish on p. 1280.

Dr. GORDON HOLMES spoke on sleeplessness due to, or associated with, neurological conditions. The nature of sleep, he said, had been a matter of speculation and discussion since the time of the early Greeks; it had remained for Pavlov, by a series of brilliant researches, to bring the subject into the region of exact physiological investigation. His work was based on a study of the conditioned or acquired reflexes—i.e., special reactions to changes of surroundings—which Pavlov said were the reactions of new nervous connexions brought into existence in education and training. All these reflexes depended on the activity of the cerebral cortex. Under certain conditions the stimuli which at first evoked positive reflexes became inhibitory, arresting the active functions of the cortical cells concerned in the reflex; it was an active protective process, guarding the cells from functional derangement as a consequence of over-use or strain. It enabled the reflex centre to acquire localised sleep, and so recuperate. Repeated excitation at many cortical points might inhibit the whole cortex, unless kept in bounds by antagonistic nervous processes. This was in fact sleep, for sleep and internal inhibition were identical. In animals sleep was easiest induced by thermal and tactile stimuli. Moreover, a well-established rhythm in the succession of wakefulness and sleep might incite at predetermined periods the onset of sleep, apart from cortical fatigue.

Insomnia of neurological origin could be divided, he said, into the organic, the psychogenic, and the primary. Of these the least important was the organic, but insomnia as a primary symptom occurred in nervous disease, and the best instance was encephalitis lethargica. In that disease the sleep disturbance was almost certainly due to lesions in the region of the hypothalamus, or the grey matter around the floor of the third ventricle, where it was practically certain a "sleep centre" resided. Occasionally insomnia was a symptom in early general paralysis of the insane, especially during the restless and exuberant phase. In later stages lethargy was more usual. Sleeplessness was often, too, a prominent symptom in cerebral arterio-sclerosis, especially when associated with high blood pressure; usually it was found in the type characterised by mild headache, slight vertigo, and a rapid tiring by effort, with failure of mental concentration.

To the organic group belonged the sleeplessness due to certain poisons, such as alcohol or endogenous toxins. But it was in the functional or psychogenic nervous disorders that the neurologist most often met with severe insomnia. It was one of the commonest symptoms in all forms of neurasthenia. Sometimes such a patient slept for a sufficient number of hours, but was not refreshed thereby. In the traumatic variety, and in that due to emotional factors, sleep was often disturbed by dreams. Sleeplessness might also be a troublesome feature in hysteria, but here the complaint was apt to be exaggerated.

The most difficult forms of insomnia to treat were those in the anxiety neuroses. Sometimes in sleepless persons no organic or psychogenic causal factor could be discovered, and in some of these the inability to sleep enough seemed to be constitutional, often hereditary. In women of this type severe sleep disturbances were liable to occur at the climacteric.

Treatment.

The cause of the sleeplessness should first be sought to be removed, but this was often a mere counsel of perfection, as the insomnia had probably established a vicious circle. It was most important, especially in the neuroses, to break the habit of sleeplessness as quickly as possible. Often a few nights' good sleep, however obtained, restored the patient's confidence and established a mentality more favourable to normal rest. Comfort and warmth could not be neglected, and a change of surroundings was often very beneficial. Most normal people slept best after taking moderate exercise. In neurotic persons a break from work and the substitution of open-air games was of advantage. But there must not be overtiredness. Some patients, on the other hand, slept better after a period of complete rest; this was especially so in the more exhausted types of neurasthenia, and in tired-out and poorly nourished people who were otherwise normal. Physical treatment could be of great value in sleeplessness, and massage was the most important of these, especially in exhausted states. It was useful also when the symptom was associated with cerebral arterio-sclerosis. The masseuse must be sympathetic, as annoyance might counteract the benefit. At first fairly vigorous, the massage should become more gentle, and then the patient should be made warm and comfortable for the night. In excitable states massage was useless, and might be disturbing. Hot baths late in the evening often promoted sleep, though their effect might be to make the patient more wakeful. In most cases the physician could not dispense with drugs, however much he might wish to, and he thought the danger from their use had always been grossly exaggerated. The risk of abuse and prolonged administration was greatest in neurotics. Drugs were either sedatives or true hypnotics. Of the former the bromides were the most useful, especially in the treatment of the neuroses. Pavlov had shown that bromide in large doses quickly cured fatigue and regulated the activity of the nervous system by strengthening the intensity of the internal inhibition. Larger doses of bromide should be given than was the custom. If bromide alone would not induce sleep small doses of chloral could be added, but only for a short time. Sometimes alcohol was safer and more effective than ordinary hypnotics, but only for those unaccustomed to its use. When a patient had difficulty in getting to sleep, but slept soundly thereafter, medinal could be given, as it was quickly absorbed. Wakefulness in the early hours called for sulphonal, whilst light sleeping required bromides. Several small doses were usually better than one large one. Taken all round, medinal was one of the most efficient of the hypnotics.

Sir MAURICE CRAIG agreed that lack of sleep was more damaging to the young than to the adult; but a person with a psychopathic inheritance, or who was debilitated by illness or anxiety, might quickly become confused if his sleep suddenly failed. He did not propose to deal with the case of the insane; he was more attracted to the preventive aspect. Some people must have their sleeplessness quickly relieved, or serious changes would result. Generally the first thing to do was to procure sleep for the patient. He

deprecated, from the point of view of the patient and the public, the use of the term "sleeping draught." Except preparations like paraldehyde the drugs given were not really sleeping draughts, for they would not compel sleep if given in the daytime to a person going about his usual avocation. The term sleeping draught sometimes raised fears in the patient's mind, and might result in his refusal to use what was prescribed. Bromides, said Sir Maurice Craig, were very valuable in small doses, but if large doses were needed he regarded them as distinctly dangerous. It was not uncommon to find persons who were taking bromides in a confused mental state, the mind clearing when their administration was stopped; they also upset the digestion and were toxic to the skin. Paraldehyde was safe, but had great disadvantages in that its excretion took place through the respiratory tract, and hence the bronchial tubes were liable to be blocked by mucus, an important consideration in the aged. One of the most valuable sedatives was chloral, and Sir Maurice Craig preferred it to bromide. Five-grain doses could safely be given several times in 24 hours. He had never seen any ill-effects from the barbitone group, but he did not feel comfortable about prescribing sulphonal, save in quite small doses. He was against changing the hypnotic when he found one to suit the patient.

Sir WILLIAM WILLCOX thought insomnia should be approached from a general point of view, and that it was a mistake to begin treatment by resorting to drugs; general measures should first be given a good trial. The subject was very difficult, because of the variety of cases met with. In his experience the insomnia associated with delirium tremens and with choreic states would often yield better to a hot pack, or measures of that kind, than to drugs. In illnesses such as acute pneumonia, in which the toxins of the disease caused insomnia, it was necessary to secure sleep in the first few days before organs such as heart and kidneys were damaged by the toxæmia. For such cases, in the first three days, it was his custom to give hypodermically morphia, gr. ¼, and atropine, gr. 1/200, and when the struggle was reaching its height he left the patient to fight it out without running the risk of producing damage by hypnotic drugs. When, in neurasthenic and psychasthenic states, it was necessary to use hypnotic drugs, caution should always be observed, and their administration should not be long continued. It was the long continuance which was especially to be deprecated, and heroin seemed a particularly dangerous drug in this respect. He did not subscribe to the view that only unstable people became drug addicts; if heroin were given nightly for a month to members of a football team he believed half of them would become addicts. Many drugs produced a tolerance which was a danger. However valuable drugs might be for insomnia it must always be remembered that they were toxic. Bromural and adalin were valuable drugs, and he had not met with serious effects from them.

Dr. F. M. R. WALSHE said that apart from references to the great work of Pavlov almost the whole of this discussion might have taken place 30 years ago. The time had arrived when there should be a restatement of the problem of insomnia. Was the insomnia of anxiety neurosis, of nocturnal delirium, and of high blood pressure the same? Dr. Gordon Holmes's remarks contained the essence of the problem. Bromide was not a cerebral sedative, but an active stimulant. The information required about these drugs did not concern their toxic effects, but their normal pharmacological action. The problem needed re-orientation based on recent physiological knowledge.

Dr. ELLIS spoke especially of the difficulties of assimilation as contributing to sleeplessness. If something were given to empty the stomach between 2 and 4 A.M. the sleep broken at that time would often be restored, as, normally, the pylorus did not open during sleep.

Dr. C. P. SYMONDS said it had been pointed out that sleep was not invariably associated with low blood pressure and dilatation of the vessels of the limbs. In early psychoses it was difficult to distinguish between cause and effect. When a patient with anxiety neurosis was worried about his capacity to sleep it was well to give a hypnotic three nights in succession, telling the patient he could later on have a dose by his bedside to take in case of need. The knowledge that it was there generally enabled him to manage without it, as it banished his anxiety. He was a great believer in the efficacy of changing the patient's surroundings to break the wakeful habit.

Dr. GORDON LANE questioned whether sleep was ever so profound as to prevent the sleeper being aware of sound and other stimuli. When the blood was charged with waste products, which were probably doing much to keep up the stimulation which resulted in wakefulness, little good was likely to come of an intensive use of hypnotics.

TUBERCULOSIS SOCIETY.

AT a meeting of this Society, held on Nov. 18th, Sir STCLAIR THOMSON, the President, took the chair, and Dr. G. T. HEBERT read a paper on the

Treatment of Tuberculous Empyema by Replacement with Air.

He said that the tuberculous origin of an empyema, if not proved by the discovery of tubercle bacilli in the fluid, was inferred from the absence of secondary organisms in cases which gave evidence of old or recent tuberculosis in the corresponding lung. Tuberculous empyema, though an uncommon complication of pulmonary tuberculosis, was one which called for adequate treatment, because of the large quantity of fluid which collected—unless prevented by extensive pleural adhesions. The presence of a large volume of fluid, amounting sometimes even to 8 or 10 pints, not only collapsed the lung on the affected side, but also through displacement of the mediastinum compressed the already engorged lung on the sound side, causing dyspnœa and cyanosis. The fluid gradually increased in consistency and gave rise to a variable degree of toxæmia. If the condition remained untreated, the patient was liable to develop secondary infection, amyloid disease, or hypertrophic osteo-arthropathy.

The two main objects of treatment were: (1) to abolish toxæmia by removal of the fluid and by checking and preventing its reaccumulation; and (2) to relieve dyspnœa, by reducing the mediastinal displacement, thus allowing the lung on the healthy side to function normally, and by promoting healing of the pleura, which in time would allow of the partial expansion of the collapsed lung. The disadvantages of simple aspiration were mainly: (*a*) the distress caused to the patient by the removal of large quantities of fluid; (*b*) the difficulty of complete removal, this being also liable to cause sudden re-expansion of the lung; (*c*) reaccumulation of the fluid; (*d*) inadequate healing of the pleura. Rib resection was inadmissible, because of the grave risk of secondary infection. Gas replacement, on the other hand, repeated at intervals until the fluid ceased to accumulate, had many advantages. The pleural cavity could thereby be emptied almost completely; there was no marked change in intrapleural pressure, and no sudden displacement of the mediastinum; progress could readily be followed by X ray examination; the pleura was kept dry and consequently healed more readily, while any further deposition of fibrin was stopped; absorption of the gas in the intervals between replacements exerted an even and continuous traction on the diseased lung. Dr. Hebert believed that the results obtained by gas replacement were thus very much better than those obtainable by any other method. The patient was left with a respiratory capacity only slightly less than

normal, and recurrence of the empyema was impossible because the layers of the pleura were firmly adherent. The possible risk of reactivating pulmonary tuberculosis by expansion of the diseased lung in cases of tuberculous empyema was, he thought, more than counterbalanced by the prospect of almost complete restoration to health which was afforded by treatment by replacement.

Diagnosis could be made from the history and appearance of the patient associated with definite physical signs: fullness of the chest on the affected side, and relative immobility, especially of the lower part; absence of any resonance on percussion in this area; loss of breath sounds, of vocal resonance and of fremitus; and displacement of the mediastinum towards the opposite side. The nature of the fluid could, however, only be ascertained by exploration which should be undertaken in all cases of effusion.

With regard to the method of production, Dr. Hebert pointed out that tuberculous empyema could be produced in one of four ways: (1) from a simple serous effusion, the change usually taking place within a year from the onset of the effusion; (2) after spontaneous pneumothorax, this being looked upon by Fishberg and others as the commonest method of production; (3) as a complication of artificial pneumothorax, in which the serous effusion met with in about 50 per cent. of cases became purulent; and (4) from rupture of an abscess.

Dr. Hebert then gave details of 11 cases treated by gas replacement, in the majority of which an immediate improvement took place in the general condition of the patient, followed eventually by expansion of the lung and obliteration of the pleural cavity. In the remaining cases treatment had not been completed, but was progressing satisfactorily. In five cases the tuberculous pus was produced by the first method described above, in three cases by the second method, and in one case by the third. Two cases of hæmorrhagic effusion were included for comparison. In all these cases the fluid showed no secondary organisms either in the film or on culture. Tubercle bacilli were found in large numbers in the film in two cases.

Discussing the technique of the treatment, Dr. Hebert said that when an attempt was to be made to empty the pleural cavity a site should be chosen which would enable it to be tapped at its lowest point. For first replacements two needles were almost invariably used, the smallest size for withdrawing the fluid, and a Riviere refill needle, inserted higher up, for introducing the air from a Lillingston-Pearson type of pneumothorax apparatus. In subsequent replacements, however, when the amount of fluid to be withdrawn was about a pint, only one needle was used. The interval between replacements depended upon the rate of reaccumulation of the fluid, but it was probably wise to perform a replacement as soon as a pint had collected. In the average case the second replacement took place two weeks after the first, the interval being increased by one week for each subsequent replacement. As a rule, the number of replacements required was ten, extending over a period of about a year. Patients were well enough to return to work in about three months from the beginning of the treatment. Out of a total of nearly 90 replacements only one was followed by an abscess in the track of the needle, this being due to blocking of the needle by a long stringy clot which protruded from the wound when the needle was withdrawn. So far in his treatment of cases of tuberculous empyema there had been no need to resort to phrenic avulsion or thoracoplasty, and it was hoped to avoid these operations even in one of the cases cited in which the empyema was of seven years' duration.

Dr. Hebert emphasised the value of X ray examination in the management of the treatment. By this means it was possible at once to ascertain the degree of cardiac displacement, the state of collapse of the lung, the degree of completeness of replacements, the thickness of the pleura in some cases, the condition of the lung on the opposite side, and the presence of any cuplike adhesions which might hold some of the fluid.

A number of radiograms were shown, and the meeting ended with a short discussion.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

ON NOV. 22nd Prof. ARCHIBALD YOUNG read a paper on

Some Surgical Aspects of Gastric and Duodenal Ulcer.

He began by referring to a statistical study,[1] at his clinic, of the efficiency of modern methods of diagnosing ulcers of the stomach and duodenum, and of the value of gastro-jejunostomy in their treatment. The diagnostic error had been found to be small, and to depend not upon any fault in the methods, but upon erroneous deductions from the data which they provided. In that series 67 per cent. of patients had made a complete recovery after gastro-jejunostomy, while 83 per cent. had been greatly or considerably improved. The operation done was the usual posterior anastomosis, without pyloric exclusion.

The new series upon which Prof. Young's present paper was based included 146 definitely ascertained cases, of which 12·3 per cent. were gastric, 28·08 per cent. duodenal, and 59·6 per cent. pyloro-duodenal. Of these, 122 had occurred in males, 24 in females. He believed that many pyloro-duodenal ulcers, although often classified as gastric, had more in common with true duodenal ulcers than with those of the gastric type. He still performed gastro-jejunostomy as an almost routine operation for peptic ulcer, and found it especially valuable in duodenal and pyloro-duodenal cases. In his experience pneumonia was the chief cause of post-operative death; its incidence might be diminished by careful nursing, and—since the condition was often of embolic origin—by gentleness in handling the ulcerated segment. The therapeutic effect of gastro-jejunostomy was due to a combination of factors, of which drainage and access to the stomach of the alkaline contents of the duodenum were important. It was unnecessary to occlude or divide the pylorus to ensure relief. Excision of the ulcer was generally valueless, unless combined with some method of securing gastric drainage. Plastic operations at the pylorus were no more efficacious than simple gastro-jejunostomy. Gastrectomy he reserved for large and adherent gastric ulcers, believing that so severe an operation was seldom justifiable for more limited lesions. Partial gastrectomy did not eliminate, though it might lessen, the risk of recurring ulceration. Post-operative jejunal ulcers were said to occur in from 1–3 per cent. of cases, and among the possible predisposing factors were high residual gastric acidity, unsuitable suture material, and local infection. Prof. Young had so rarely encountered post-operative ulcer that he felt inclined to add a geographical factor; he had not had a case in the series under review.

Much of the advance in the treatment of perforated ulcer was due, said Prof. Young, to Murphy, who had consistently taught rapidity in operating and the minimum of interference. Gastro-jejunostomy was rarely required either at the primary operation or later, as Nature was able to a considerable degree to correct the narrowing which might follow infolding of the ulcer. Prof. Young preferred to drain the area of perforation locally. With regard to diagnosis, most stress should be laid on a good history. Clinical and laboratory tests were of great help, but the interpretation of the results of X ray examination was very liable to error.

[1] THE LANCET, 1923, i., 681.

Reviews and Notices of Books.

SMALL-POX AND VACCINATION.

Handbuch der Pockenbekämpfung und Impfung. By Prof. Dr. OTTO LENTZ and Prof. Dr. H. A. GINS. Berlin: Richard Schoetz. 1927. Pp. viii.+900. With 108 illustrations in text and 7 coloured plates. M.50.

THIS large volume is a valuable compendium of past and present knowledge on the subject of small-pox and vaccination; its appearance is welcome at a time when in this country the occurrence of small-pox is increasing and the practice of vaccination is diminishing. The monograph contains 19 chapters, written by 16 different authorities, and opens with an historical section by Holländer, in which he relates the sources of the various kinds of vaccine lymph.

At the beginning of the nineteenth century vaccination proved a welcome and safe preventive against a severe form of small-pox. Later vaccine lymph, which had for years been passed from arm to arm, became so attenuated that only small and uncharacteristic vesicles resulted with uncertain protection. A return of vaccinia to the calf revived its activity and protective efficiency. Later still a weakening of calf lymph made necessary the attempt to renew the vaccine stock by inoculation of the calf with small-pox material, so as to start a fresh strain of vaccinia. This was eventually done, and incidentally established beyond doubt the essential unity of the two clinical conditions. The first recorded success in variolising cows was by Gassner about 1807 and later by Robert Ceeley in 1839. As illustrating the difficulty in carrying out this operation it may be recalled that Badcock in 1840, as the result of between 500 and 600 inoculations, succeeded on only 37 occasions in infecting cattle with variola. From them he obtained vaccine lymph which was extensively used. The serious difficulty found in infecting calves with small-pox directly led to the use of the monkey or the rabbit as a more susceptible intermediate host. These animals produce vaccinia which is active for man. Rabbits were first used by Calmette and Guérin in 1901 for testing and carrying on strains of vaccinia. The lymph known as "lapine" has proved a very useful and active seed lymph for the calf, which latter animal has remained the chief source of vaccine for human use. A new kind of vaccinia inoculum, known as neurovaccine, was introduced by Levaditi in 1923. It consists of the brains of rabbits inoculated intracerebrally with vaccine lymph. It is claimed by Levaditi that neurovaccine is of uniform and high activity, and does not contain any bacteria. The manufacture of lymph and recent experimental and strictly scientific inquiries are well summarised in the book.

A chapter by Gins deals with the objections to vaccination, especially to compulsory vaccination, which have been put forward at different times. The evidence for the high degree of protection against small-pox given by vaccination and revaccination is well set out, as is natural in a book coming from Germany, where these measures are very thoroughly carried out, and resulting freedom from variola is almost complete. The harmful effects which result from careless vaccination are dealt with at some length by Czerny and Opitz. The occasional occurrence of encephalitis after vaccination during the last few years is discussed, and the suggestion that the nervous disease is due to an added infection is held to be the most probable explanation.

In the section on pathology of variola and vaccinia especial attention is drawn to the regular appearance of Guarnieri bodies in the rabbit's cornea following infection. These have been used as a means of diagnosing variola and of testing the strength of vaccinia according to the methods of Paul and of Gins. In the clinical and epidemiological accounts of small-pox the two different types of the disease are recognised. These are the oriental severe type, and the mild type now present in this country and known elsewhere—e.g., Peru, Australia, and Canada, and sometimes named alastrim. The identity of the virus in these two clinical forms is scarcely open to dispute, but its virulence and immunising properties show great differences in the two cases. When and in what circumstances the mild may revert to the severe form is quite unknown. The relations between animal and human pock diseases are dealt with, and the experimental evidence of cross immunity in this class of infections is discussed. The existence of any community of virus between vaccinia and fowl-pox is not accepted. On the other hand, that the same virus may be, and in many cases is, responsible for small-pox and vaccinia in man and monkeys, and for cow-pox, sheep-pox, goat-pox, horse-pox, and swine-pox is agreed to as proven. The immunity to vaccinia and small-pox is in part, at any rate, humoral, and due to antibodies which can be found free in the blood, but the existence of an additional "tissue" immunity in the skin is considered possible but not, so far, satisfactorily demonstrated.

A careful summary is given of the observations on the wide distribution of vaccinia virus in the body of vaccinated animals which has been shown to exist by Ishigama, Blaxall, Ohtawara, and others. The histology of variola and vaccinia are dealt with, and the view taken by Paschen, Prowazek, and Levaditi, that in vaccinia the seat of the primary pathological process and the multiplication of the virus is in ectodermal cells, is recorded, but Ledingham's recent evidence pointing to the infection being essentially in the reticulo-endothelial system is not quoted. The various attempts and failures to cultivate the virus in ordinary media are narrated, and the work of Parker and Nye, in which they appear to have propagated it in cultures of testicular tissue, is spoken of as hopeful. The more recent demonstration of remarkable increase of vaccinia virus in cultures of embryonic chicken tissues had evidently not been published early enough for inclusion in this article.

In conclusion it may be said that this book is a most useful and judicious summary of knowledge on the whole range of its subject matter. References to the literature are adequate, even if placed rather awkwardly at the end of each chapter and not in a general index of authors. There is, however, a general subject index at the end of the book.

THE ENDOCRINES IN GENERAL MEDICINE.

By W. LANGDON BROWN, M.D., F.R.C.P. Lond., Physician to St. Bartholomew's Hospital. London: Constable and Co. 1927. Pp. 144. 7*s.* 6*d.*

THIS little book forms one of the Modern Medical Monographs series, edited by Prof. H. MacLean, and is written primarily for the general practitioner, who will find in it an account of the endocrine system and its diseases presented in a form which should certainly be of service to him. The system is here treated as a whole rather than as a number of isolated units; there are chapters, for instance, on the biology of the group, behaviour in childhood, effects on general metabolism, and relationship to the psychoneuroses. This method of presentation differs from that of most other text-books on the subject, and the outlook is welcome. There are, however, other chapters devoted to the more important individual glands and their diseases, notably the thyroid, the parathyroids, the pituitary body, and the adrenals. In these sections Dr. Langdon Brown has drawn largely from his own personal experience, both in the laboratory and at the bedside. Useful information is given with regard to recent methods of investigation of these syndromes and their treatment, and the observations of other clinicians and laboratory workers, where they have a practical application, have been incorporated in the text.

There is a final chapter on endocrine therapy, which is necessarily cautious in tone. It is pointed

out that therapy has not kept pace with the increase in our knowledge of the endocrine system. In one sense this has been as well; for the way in which glandular and other extracts have often been ignorantly given in the past would inevitably have done harm had they been potent. Fortunately, the majority were not. At the present moment Dr. Langdon Brown considers that reliance can safely be placed on thyroid and pituitary medication. Insulin has, of course, already proved its worth. Collip's parathyroid extract is a new preparation, which is of great value in tetany due to parathyroid deficiency, and the ovarian extract of Allen and Doisy, which is now available for general use, promises, when its effects have been more fully investigated, to be of considerable practical utility. Adrenalin, the secretion of the adrenal medulla, is well known to produce beneficial effects in certain diseases, notably asthma. Its limitations in Addison's disease are fully discussed. Dr. Langdon Brown is frankly sceptical as to the value of extracts of the adrenal cortex, and he has never seen definite results follow the administration of extracts of thymus, pineal, prostate, placenta, or mammary gland. The therapeutic use of endocrine preparations is much in need of such a well-considered and authoritative opinion, which strikes a judicious mean between that of uncritical and over-enthusiastic endocrinologists and the cautious, if not agnostic, physiologist.

CLINICAL NEUROLOGY.

For Practitioners and Students of Medicine and Medical Students (a free translation, with changes and additions, of the book by Prof. H. Curschmann, Rostock). By EDWARD A. STRECKER, A.M., M.D., Professor of Nervous and Mental Diseases, Jefferson Medical College, Philadelphia; and MILTON K. MYERS, B.S., M.S., Neurologist to the Philadelphia Northern Liberties Hospital. Philadelphia: P. Blakiston's Son and Co. 1927. Pp. 410.

A BOOK of this kind is apt to prove unsatisfactory, however laudable the motives of its authors. Believing, as they appear to do, that "there exists a real need for a brief clinical exposition of neurology," they have thought of supplying it by furnishing the student with a "boil-down" of a German text-book conceived on considerably more ambitious lines. No illustrations or diagrams relieve its pages, though neat little paragraphs, enclosed within rules, head sections on different diseases and contain snappy summaries quite in the best medical journalese. Life is too short, apparently, and medical art too long, to refer to well-known signs except as "Romberg," "Babinski," and so forth. If the general teaching of the book is accurate enough it scarcely compensates for a condensed brevity resulting in such erroneous statements as: "Epilepsy is a dreadful disease;" for epilepsy is not a disease and in innumerable instances its manifestations are benign.

POSTENCEPHALITIC RESPIRATORY DISORDERS.

By SMITH ELY JELLIFFE, M.D., Ph.D. New York and Washington: Nervous and Mental Disease Publishing Company. 1927. Pp. 135.

OF the various menacing and therapeutically embarrassing sequelæ of epidemic encephalitis an unenviable place must be given to disorders of the respiratory apparatus, because of their complexity, frequency, and intractability. Dr. Jelliffe has performed a useful task in collecting and collating a large number of recorded cases and in adding personal cases in considerable detail. With so much material problems of classification and physiological grouping can receive a more satisfactory solution than is possible for the student of isolated examples. Nothing is clearer than that implication of more than merely one functional level is responsible for the clinical varieties of this respiratory affection. In some cases bulbar, in others pontine, mesencephalic, thalamic, cortical mechanisms can be demonstrated to be playing a part. The author goes further, holding that in other examples the trouble has a psychopathological basis, and evidently favours such views as that it may be a representation of a "larvated masturbation," that some of the phenomena are "loosened bits of anal-erotic functioning," and what not. Of discussions of this kind the general remark may be made, that they confirm the believer in his belief but leave the sceptic sceptical.

ANATOMY OF THE NERVOUS SYSTEM.

Anatomie élémentaire des centres nerveux et du sympathique; vie de relation et vie végétative. By P. GILIS, Professor of Anatomy in the Faculty of Medicine of Montpellier. Paris: Masson et Cie. 1927. With 35 diagrams and one plate. Pp. 225. Fr. 20.

THAT books on the anatomy of the nervous system continue to appear is doubtless all to the good, if it stands for recognition of the necessity of a knowledge of neuro-anatomy as a basis for any further study of that system. Certainly the student has a far wider choice in this respect than his predecessors of 20 or 30 years ago. Prof. Gilis's little manual deals with the matter from a physiological viewpoint mainly, in that only the broader lines are drawn in the picture, while histological details are omitted, and throughout its pages the correlation of function with structure is carefully sketched. The diagrams reach a high standard of clearness and seem to be remarkably accurate, on the whole. In Fig. 14, however, we consider the vestibulo-spinal tract is assigned a position in the cord that is rather too lateral, and this would appear to be the case also with Helweg's tract. That tectospinal and reticulospinal tracts should be omitted is doubtless an oversight. In Fig. 10 the apparent origin of the twelfth nerve is placed at a somewhat higher level than that usually given for it. The sections dealing with the sympathetic system are unusually full and the relations of its parts are clearly expressed. With this unambitious manual for a guide the student should find the way smoothed for him when he begins his acquaintance with the nervous system.

The Anatomy of the Nervous System, from the Standpoint of Development and Function. Third edition, revised. By S. W. RANSON, M.D., Ph.D., Professor of Neuroanatomy, Washington University School of Medicine. London and Philadelphia: W. B. Saunders Co. With 284 illustrations, some in colours. 1927. Pp. 425. 32*s.* 6*d.*

THE third edition of Prof. Ranson's text-book of nervous anatomy is little altered from its predecessor. New material incorporated deals with recent advances in knowledge of neuroglia and its varieties. Revision has been carefully carried out, in accordance with newer conceptions of organisation and function of the nervous system. In its present form the book provides a useful foundation in macroscopical and microscopical anatomy, considered always with an eye to the physiological correlates of given structures, thus supplying a dynamic as opposed to a static presentation. With clear diagrams and with numerous bibliographical references it is wonderfully complete, and for the novice in neurology it should prove highly serviceable.

SAFEGUARDING OF INDUSTRIES.—The question of renewing Exemption Orders Nos. 1, 2, 3 and 4, which are due to expire on March 6th, 1928, is now under consideration of the Board of Trade. The articles covered by these exemption orders include barbitone, dial, didial, guaiacol carbonate, hydroquinone, methyl sulphonal, phenacetin, phenazone, piperazine, pyramidon-veronal, salol, sulphonal, and urea. Communications should be addressed, before Jan. 8th, to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George-street, Westminster, S.W. 1.

THE LANCET.

LONDON: SATURDAY, DECEMBER 17, 1927.

SLEEP.

THE general public, while taking normal sleep very much for granted, has always been ready to marvel at pathological states of somnolence. The trance, whether hysterical or induced by hypnotic suggestion, frequently attracts the attention of the daily newspaper, and the prominence of lethargy among the symptoms of epidemic encephalitis speedily gained for that disease a widespread notoriety. Until the present century neither physiologists nor physicians have been able to offer the layman much enlightenment as to the nature either of normal sleep or of its pathology, though there has been no lack of theories, as was shown by Dr. E. M. CALLENDER in his recent address to the Medical Society of London (published on p. 1280), and in the subsequent discussion (p. 1294). Recently, however, as in the case of numerous phenomena, converging lines of research, many of which had at first no apparent relationship to sleep, have led to a focus of illumination, in the light of which a definite conception of the nature of sleep is already becoming outlined. The most unexpected of these contributions to our knowledge has been the outcome of PAVLOV'S investigation of conditioned reflexes. PAVLOV found that in the course of experiments on the conditioned reflexes of dogs the animals often unaccountably fell asleep. He was able to relate this phenomenon to the presentation of stimuli which had been endowed with inhibitory effects. This led him to adopt the view that sleep and inhibition were identical. An inhibitory process initiated at some point in the cerebral cortex by an appropriate stimulus tends to spread over the whole cortex and the animal falls asleep. According to PAVLOV, we may with equal truth describe sleep as generalised inhibition or inhibition as localised sleep. How is this conception to be brought into relation with the capacity of certain drugs for producing sleep? The first step in this direction was taken by PAVLOV himself, who showed that inhibitory conditioned reflexes were greatly strengthened by the administration of bromides, while the reverse effect was produced by caffeine. PAVLOV'S conception of sleep as inhibition is thus supported by the fact that drugs which enhance inhibition also produce sleep, while the reduction of inhibitions and wakefuiness are similarly allied. HIRSCHFELDER and SERLES have shown that the large group of anæsthetic and hypnotic drugs, in spite of their chemical diversity, possess an important physico-chemical property in common. When added to an emulsion of oil and water they convert the oil-in-water phase of the emulsion into the water-in-oil phase. The effect of this is greatly to raise the electrical resistance of the emulsion. It seems a justifiable hypothesis that these drugs act in the same way in the body and that by altering the phase of the emulsion of lipoids which constitutes the cell membrane of the neurons they reduce electrical conductivity in the nervous system, possibly at the synapses. Whatever be the correct view as to the physiological nature of inhibition, it seems necessary to believe that inhibited neurons are maintained in a distinctive physico-chemical state which renders them refractory to stimuli reaching them. Thus it may well be that in physico-chemical terms there is no difference between inhibition and sleep. This, however, does not mean, as PAVLOV seems rather to imply, that sleep and inhibition are interchangeable terms, for its localised character is of the essence of inhibition, whilst a general reduction of activity is equally characteristic of sleep. The distinction between them therefore remains of great physiological and psychological importance.

Nevertheless the recognition of a relationship between sleep and inhibition illuminates many aspects of sleep and allied states. In PAVLOV'S experiments sleep was a conditioned reflex—that is, it was capable of evocation through a process of association by many stimuli. Even painful stimuli could in this way become effective in causing sleep. So in everyday life the act of undressing and retiring to bed, darkness, and muscular relaxation are conditioned stimuli which reflexly evoke normal sleep. For this reason many people experience some difficulty in going to sleep for the first time in a strange room, where some of their usual stimuli are absent. Further, sleep, like inhibition, can itself be reflexly inhibited, and a succession of sleepless nights may, to use a mathematical term, change the sign of the familiar stimuli so that by association they now evoke not sleep but wakefulness. This explains the value of the early use of sedative drugs in the treatment of insomnia. The drug produces sleep by acting at the physico-chemical level, but by so doing it breaks the conditioned inhibition of sleep which has grown up, and re-establishes the normal response to the ritual of retirement. It seems likely that both the hypnotic trance and its associated state of suggestibility are to be explained on the basis of PAVLOV'S conception. On this hypothesis hypnosis would seem to be a condition intermediate between physiological inhibition and full sleep. Rapport with the hypnotist is a thread of wakefulness uniting the subject to the external world, but the diffuse inhibition of his judgment and self-assertive impulses compels an uncritical acceptance of the suggestions made to him. The late S. R. WILSON, whose recent death robbed the profession of a brilliant investigator, found that by causing a subject to inhale a mixture of nitrous oxide and oxygen he could produce a state of greatly enhanced suggestibility without loss of consciousness, and he attributed this effect to depression of the highest mental functions. He found also that caffeine in a similar way enhanced suggestibility, a fact which may afford a physiological basis for the destructive effect of tea-table gossip upon reputations.

Whereas physiology and pharmacology support the view that sleep is a function of the whole cerebral cortex, pathology appears in some measure to favour the hypothesis of the existence of a sleep "centre." The lethargy of encephalitis usually resembles normal sleep in that the patient can be aroused, and its constancy as a symptom of that disease would seem to be related to the predilection of the virus of encephalitis for the mid-brain and hypothalamus. It is well known that somnolence is often a symptom of tumours and abscesses in this region. On these grounds it has been suggested that the thalamus operates as a sleep "centre" by cutting off from the cortex the stream of sensory impulses. This view seems hardly tenable, for a lesion which produced lethargy in this way could scarcely fail to cause sufficient impairment of sensibility to be discovered by examination, and this is conspicuously rare in encephalitis. A possible clue to the problem is afforded by the remarkable condition known as

narcolepsy which is characterised by sudden, brief, and irresistible attacks of sleep. Narcolepsy is often unaccompanied by any evidence of disordered metabolism, but in some cases, as in the famous fat boy in Pickwick, it is associated with obesity. We are now coming to attribute many so-called symptoms of "hypopituitarism" to lesions of the hypothalamus, and there is a large body of evidence that important metabolic centres are located in this region. It seems not unlikely that changes in cerebral metabolism may play a part in the production of pathological and indeed normal sleep, and that the sleep centre which may be affected by disease is a centre which regulates the metabolic activities of the nervous system. If this were so, the physico-chemical basis of sleep would form a bridge between PAVLOV'S theory and the hypothesis of the existence of a sleep centre.

HUMAN TRYPANOSOMIASIS IN AFRICA.

IN vast regions of the tropics there is dispute to the death between man and insect, and in Africa sleeping sickness gives urgent proof that man as yet hardly holds his own in the continuing struggle. The Interim Report [1] of the League of Nations' International Commission on Human Trypanosomiasis in Africa is of special interest because the outlook of such a band of investigators is not limited by local conditions. Though much valuable work has been, and is being, done in various countries, the problems of trypanosomiasis remaining to be solved are of fundamental importance for control of the disease, and perhaps, as the Commission suggests, it is less likely to yield its secrets to isolated observers than to steady coördinate research. Already the Commission is convinced that the biology of the human trypanosomes must be studied in man himself, and in strains freshly isolated from man, and that the work can be carried out only within reasonable distance of the naturally infected areas. Since different areas are suited to different lines of inquiry, there has in the past been a tendency to local specialisation; thus, while the clinical and therapeutic studies made in the Belgian and French Congo show what can be done with abundant clinical material, nothing is yet known about the transmissibility, and little about the detailed morphology, of the Congo strains of human trypanosomes. In Uganda, where circumstances have not helped extensive clinical inquiry, most of the research has concerned the parasite's behaviour in the insect vector; whilst in other countries efforts have been directed mainly to control and eradication. The Commission points out that though this topographical specialisation is natural, and has certainly not been fruitless, there is undoubted need for freer exchange of results and ideas between the widely separated workers, for standardisation of technique, and even for "judicious" combination of methods to be applied in all infected areas. Thus would be gathered a mass of accurate information on which important conclusions could be securely based.

The present investigations have been carried out in the Kavirondo district by Lake Victoria Nyanza, and personal reports are submitted by various of the Commission's members, all of whom had previously made distinguished contributions to our knowledge of human trypanosomiasis in the African field. Prof. F. K. KLEINE finds that in the Kavirondo district there is at present no epidemic of sleeping sickness—a fact which is due rather to the small percentage of infected tsetse than to any immunity in the population. He also records the discovery of the famous posterior nuclear forms in *Trypanosoma gambiense* which shows that these are not, as was supposed, peculiar to *T. rhodesiense*. Dr. G. LAVIER contributes a study of the development of posterior nuclear forms, and states that in man *T. gambiense* may take on an appearance identical with that of *T. vivax*. This makes it doubtful whether the latter is a human parasite. Dr. LYNDHURST DUKE shows that the resistance of a trypanosome to arsenic persists after cyclical passage of the strain through the tsetse, which has a bearing on the use of atoxyl as prophylactic against human trypanosomiasis. And a strain resistant to arsenic may be resistant to antimony. He has found also that inbibition by *Glossina palpalis* of the blood of monkeys treated with Bayer 205 does not inhibit development in the tsetse of *T. gambiense*. Bayer 205 protected a monkey against infection by cyclically infected tsetse for not more than two months. Dr. L. VAN HOOF has discovered nothing to suggest the existence of any reservoir of the virus other than man (a statement which receives recent confirmation in important observations by Dr. W. H. DYE in South-East Tanganyika Territory),[2] and that there is no carrier besides glossina. The trypanosomes are transmitted cyclically; if transmission were mechanical it would lead to the formation of limited epidemic foci. Examination of the cerebro-spinal fluid is, he says, really necessary in infected cases, and the degree of change in the fluid indicates the virulence of the trypanosomes and the stage reached by the disease. Dr. VAN HOOF holds that differences in gravity of the disease are due to variations in virulence of the trypanosomes rather than to any character in the patient which could be explained as immunity or tolerance. The spread of the disease is favoured by occupation—especially fishing. Famine often leads to abandonment of agriculture for fishing and so to exposure to tsetses, though it must be gravely noted that the tsetse can be found in banana groves adjoining villages. Endemicity depends on occupation, and security is gained only by complete separation of hosts from trypanosomes; the virus, however, becomes weakened in endemic areas if no new trypanosomes, flies, or men be introduced. It is noted that sensitiveness to arsenical drugs varies greatly in different endemic areas, and in the same area, and evidently this variation must be reckoned with in judging of the therapeutic value of any drug.

The International Commission has gathered much other information not yet ready for publication, and has opened up a vista of research extending far beyond the term set to its continuance as a working unit. Though it may not be possible or desirable to fulfil its apparent wish to control all investigations in sleeping sickness areas, there can, nevertheless, be no doubt of the wisdom of its appointment and the value of its work.

[1] Published by the League of Nations Health Organisation, Geneva, 1927. Obtainable in London from Messrs. Constable and Co.

[2] W. H. Dye: Trans. Roy. Soc. Trop. Med. and Hygiene, November, 1927, xxi., No. 3.

BURIAL AND PUBLIC HEALTH.

WHEN making improvements last year in the law of coroners' inquests and death registration, Parliament took the opportunity to provide for another and by no means unimportant aspect of the disposal of the dead. Section 9 of the Births and Deaths Registration Act of 1926 enacts that the Minister of

Health, with the concurrence of the Home Office, may make such regulations "as to the period of time a body may be retained after death in an inhabited house or other premises," as may be deemed desirable in the interests of public health. No such regulations have yet been made; it is believed that the making of them is under consideration, and it will be agreed that some such action is desirable. It is by no means unknown for a body to be kept eight or ten days after death in a small room in a crowded house. An instance, for example, is reported in which, after the deceased had died in hospital from an operation, the body was removed and carried with difficulty (and not without bruising) up narrow stairs to a room at the top of a tenement building, there to remain for as much as eight days and to be exhibited to all and sundry who from various motives had the desire to look upon a corpse. Sometimes, it may be, the reason for the delay in burial is that undertakers have difficulty in carrying out the interment earlier; more often, no doubt, the explanation is to be found in some traditional or perhaps morbid instinct which is at variance with modern standards of public health. It is a little surprising that our progressive municipalities, whose local legislation has so often set an example to the country at large, have not provided more definitely for the removal of dead bodies from dwelling-houses within a fixed period after death. Medical officers of health must often be aware of the desirability of some such provision.

Pending the making of regulations under the 1926 Act already mentioned, the existing law gives little help. The subject of burial was anciently—and for a time exclusively—a branch of the ecclesiastical or canon law. In more modern times there have been elaborate judicial utterances which have contained miniature treatises on particular aspects of burial. Such was Lord STOWELL'S judgment in Gilbert *v.* Buzzard in 1820, the case of the iron coffins. Such also was Mr. Justice STEPHEN'S charge to the grand jury at Cardiff in 1884 in Rex *v.* Price, setting out the legal attitude towards cremation, the accused being indicted for attempting to burn a child's body to avoid an inquest. The use of corpses for dissection and anatomical study was another occasion for judicial exposition. Out of all these instances the rule is to be deduced that the law presumes that everyone will wish that the bodies of those in whom he was interested when they were alive shall have Christian burial; the law declines to entertain the possibility that any other view would be contemplated. The Christian has a right to a decent funeral. The individual, it was said in Rex. *v.* Stewart in 1840, under whose roof a poor person dies, is bound—if no one else has the duty—to carry the body decently covered to the place of burial; "he cannot keep him unburied . . . he cannot cast out the body so as to expose it to violation or so as to offend the feelings or endanger the health of the living." Similarly in Rex *v.* Vann, 11 years later, it was laid down that a man must give Christian burial to his dead child if he has the means of doing so; if he fails in this duty, he can be indicted for a nuisance at common law—i.e., for doing something which affects the public health, comfort, and safety; but, at the same time, he cannot be convicted and punished if he cannot afford to pay for the burial.

Such is the existing law and, though its basis is sound, it is inappropriate as a remedy to-day. The cumbrous machinery of the law of nuisance is not what is required; the neighbours in a tenement building are not likely to consult their solicitors to set that machinery in motion. We require some simple regulation which will insist that bodies are removed from dwelling-houses within a fixed period after death just as at present a local enactment can insist on the removal from a dwelling-house of a person suffering from infectious disease. The motive of public health is the same in each case. It will be necessary to provide for the accommodation of the body in the interval, if any, before burial. The mortuary is perhaps too strongly associated in the public mind with murders, suicides, and the casual tragedies of the streets or the river. In this matter of the disposal of the dead there is need to educate the public, even at the risk of interfering with the manifestation of feelings in which natural affection, religion, and custom all have part. In this task of education many can help—clergy, medical officers and practitioners, health visitors, and undertakers; their services must be mobilised in support of any action which the Ministry of Health may take.

Annotations.

"Ne quid nimis."

THE JUVENILE DELINQUENT.

Dr. Hamilton-Pearson's paper on child delinquency, which we publish on p. 1312, should be of interest to all social workers and medical practitioners. There are many who recognise the urgency of the problem, but do not know the possibilities of treatment as compared with punishment; there are others who tend to turn down all general recommendations as impracticable. That Dr. Hamilton-Pearson's approach to the subject is broad-minded they will see from his description of a group of cases in which punishment of some kind is recommended in addition to medical treatment. It should be made clear at the outset that the figures do not relate to a series of cases of delinquency as they occurred, but to a special group of cases considered serious, or suitable for medical treatment, and therefore referred for medical examination. Although it may be at first impossible to study all the young people for whom medical and psychological investigation is desirable, it is clear that the harvest of hopeless criminals will gradually diminish if even a moderate number of delinquents are properly looked after. Such enlightened care will serve as an object-lesson to magistrates, probation officers, and the general public, so that the children will be investigated at an earlier and more hopeful stage. Dr. Hamilton-Pearson's paper indicates not only methods of treatment but also possibilities of prevention, and when school clinics are able to deal with psychological as well as physical disabilities, and are in closer touch with parents and with those who deal specially with delinquents, prevention will be no idle dream; though the school clinic will never reach its fullest usefulness until the infant welfare clinic has had similar possibilities in view. This is no more than to say that some skilful person should keep a watchful eye on every child from an early age. Ideally this should be the family doctor, and many practitioners already have sufficient knowledge, combined with sympathy and common-sense, to deal with these difficult problems. Only a small proportion of young delinquents who find their way into prison are mentally defective within the meaning of the Mental Deficiency Act. At a conference reported in THE LANCET last week (p. 1255), Dr. J. J. Landers, Governor of H.M. Prison for Boys, Wandsworth, put the figure at 5 per cent., pointing out that many of the others are below the average in intelligence, whilst many are physically defective. His high tribute in this connexion to the work of the special schools is well deserved, though other agencies are responsible in part for the good results obtained. If further evidence is needed in favour of more individual treatment of children recognised at school as potential delinquents, it may be found in contributions to a discussion[1] at the annual session of the American Medical Association at Washington in May of this year, where similar conclusions were drawn and similar proposals made. In conclusion, we may refer to the suggestion that it is unwise to appoint magistrates partly as a reward for services in other walks of life. It is arguable that if such an

[1] Jour. Amer. Med. Assoc., Nov. 5th.

appointment is to be looked upon as a reward at all it should come as recognition of success in social work of some kind, and at the Ninth International Prison Congress, held in London in 1925, it was recommended that "all who wish to be magistrates should be compelled to attend lectures on psychology, sociology, forensic psychiatry, and penology." That this argument should be put forward is symptomatic of a gradual change in the functions of justices of the peace, who are nowadays expected to work in with a variety of social organisations, charitable and otherwise. The right use of their powers is becoming more and more difficult, and requires increasing knowledge of the means by which difficulties can be best resolved and abnormalities corrected. On the other hand, there are objections to making the bench primarily into a body of experts, and to do so is contrary to the English tradition by which the expert is generally used as an adviser.

SACRO-ILIAC SUBLUXATION.

THE sacro-iliac joint has not received as much attention in Europe as it has in America, where in some circles slight changes in it are credited with causing troublesome symptoms. The Boston school of orthopædic surgeons, and notably J. E. Goldthwait, have been leaders in the study of the joint and its abnormalities, but the latest study of sacro-iliac subluxation as a cause of backache comes from Chicago. In an article in *Surgery, Gynecology, and Obstetrics* for November, Dr. H. Hoyt Cox gives a useful summary of the history of the subject and of the methods of treatment hitherto recommended and practised. These methods consist of manipulation, rest, and the application of adhesive strapping or pelvic corsets, whilst for the more severe cases ankylosing operations on the joint, by means of bone-grafts and removal of cartilage, have been employed. The diagnosis of sacro-iliac subluxation or relaxation seems to be commonly made in America, although it is rare for the condition to be demonstrated anatomically, and as a rule this can only be done in the course of an operation for its relief; X rays are of little or no use in this connexion. Dr. Cox gives statistics of 80 cases under his own care. Of these, 50 "acute" cases were completely and permanently relieved by manipulation, strapping, and one week's rest in bed. Thirteen were completely relieved but relapsed. Of the remaining 17, of which only two were "acute," nearly all were relieved by treatment. None of the 80 cases was submitted to any cutting operation.

A study of such statistics and descriptions, and of those published by Goldthwait and his school, must lead to reflection on the apparent disproportion between the means of treatment adopted and the important and massive structures concerned. It is very hard to see how adhesive strapping, no matter how tightly applied to the skin, can exert any serious control over the sacro-iliac joint, even though it encircles the whole pelvis. Nor can we expect a spinal support or pelvic corset to be any more effective. The joint can no doubt be fixed—if fixation is desirable—by the bone-grafting operations of Albee, Smith-Petersen, or Verrall, but Dr. Cox's cases, and most of the others published, were cured with astonishing rapidity, without recourse to any severe measures of this kind. Abnormal mobility of this joint and obvious alteration of the parts composing it have rarely been noted, and subluxation but rarely diagnosed, in this country; yet we hesitate to conclude that the anatomical peculiarities and way of life of the citizens of the United States differ so greatly from those of the inhabitants of Great Britain as to account for the discrepancy. Moreover, it is not in this country only that doubt is entertained of the frequency of the lesion. Dr. Royal Whitman, of New York, writes on the subject with great caution in the lately published eighth edition of his "Orthopædic Surgery," and although he describes operations for the relief of the so-called subluxation, he quotes no experience of his own. Sir Robert Jones and Dr. R. W. Lovett, of Boston, in their standard work published in 1923, were more outspoken sceptics. They wrote: "One of the writers has never seen a case of this type where he was able to detect abnormal mobility, although he has seen a great number of cases where there was direct tenderness over the sacro-iliac joint, much relieved by wearing a belt. The other writer has seen two cases where he believed a slight displacement of the sacro-iliac joint existed." These discrepancies in the experiences of surgeons of wide reputation and proved diagnostic skill are very puzzling. It is not merely a difference of opinion between Americans on the one hand and Europeans on the other, for as we have shown, two of the very foremost orthopædic surgeons of the United States have failed to encounter more than a few such cases, whereas one surgeon in Chicago has already treated 80. An international discussion on this subject might be enlightening.

VITAMIN CONTENT OF HUMAN MILK.

IN a series of papers in the *Journal of Biological Chemistry*[1] Icie G. Macy and her co-workers describe an investigation into the vitamin content of human milk. They were lucky in having at their disposal an apparently unlimited supply provided by the Detroit Wet Nursing Bureau. The milk was usually a sample from the pooled yield of 10–16 mothers in various stages of lactation, so that the difficulties often arising from the use of a non-representative supply were avoided. The women were receiving an average American dietary, and the results may therefore be regarded as pretty widely applicable. Thus far the vitamin A and vitamin B value of the milk has been examined. Before this work very few biological tests of the vitamin value of human milk seem to have been made, though inferences have often been drawn from the clinical condition of infants. Macy quotes C. Kennedy[2] and co-workers, who showed that breast-milk may vary very greatly in its vitamin A content, according to the diet of the mother. E. M. Hume,[3] working in Vienna, showed how in some cases consumption of cod-liver oil by the nursing mother may completely alter the vitamin content of her milk, whilst in others there appears to be no change. The latter cases she explained as being ones in which the mother's own body was so depleted that the vitamin was retained instead of being passed on to the baby; one mother, for instance, who received cod-liver oil and extra feeding for two months put on 43 lb. in weight without any change in the vitamin content of her milk. On the whole, however, it appears that in human beings, as in other mammals, there is a direct connexion between the diet of the mother and the amount of vitamin in her milk. Macy and her co-workers found that the value for vitamin A of human milk from the wet nursing bureau did not differ greatly from that of the milk of cows which were allowed alfalfa hay and ensilage with cereals, but no pasture. The milk was tested not only by the growth of rats but also by their power to reproduce and rear their young, and the interesting observation was made that a certain daily ration of vitamin A may be enough for a mother rat to grow, reproduce, and lactate, but that when her offspring are tested on a diet deficient in vitamin A, they may quickly show that they have little or no reserve. The observation is instructive and teaches a valuable lesson. In regard to vitamin B, Macy and her co-workers did not get so clear-cut a result, nor is it quite certain with which fraction of vitamin B they were dealing; probably it was with the anti-neuritic fraction. They concluded that "the anti-neuritic potency of mixed human milk, at least from a group of women

[1] I. G. Macy, J. Outhouse, M. L. Long, and A. Graham: Jour. Biol. Chem., 1927, lxxiii., 153, 175, 189, and 203.
[2] C. Kennedy, L. S. Palmer, and F. W. Schlutz: Trans. Amer. Pediat. Soc., 1923, xxxv., 26.
[3] E. M. Hume: Med. Res. Counc., Special Report Series No. 77, 1923, p. 153.

receiving the average American dietary, is very slight," and further, that "it is possible that many mothers do not supply enough of vitamin B to their babies." If this conclusion is true in England, it can only be true in the sense that there exists a partial or latent deficiency, because the expression of a more severe degree of deficiency is the development of infantile beri-beri, as we know by reference to the Philippine Islands. There Andrews[4] made the classical experiment of feeding puppies on the milk of human mothers, whose infants had died of beri-beri; within three or four weeks the puppies all showed symptoms like those of beri-beri and ultimately died. Whether a condition of partial deficiency in vitamin B can be postulated amongst a population, such as the English, where the expression of the full deficiency is never seen, seems a little doubtful, but in view of opinions which have been expressed as to the possible insufficiency of vitamin B in the general diet of this country, it is interesting to find that there is experimental evidence for its existence in America.

A HEALTH SURVEY IN ILLINOIS.

THE Illinois State Department of Public Health has issued the story of its health activities over a period of 50 years in a substantial book with the title "Rise and Fall of Disease in Illinois." In the preface the Governor of the State puts forward reasons why the triumph of man over disease in Illinois ought to interest every person in the State; the report itself, presented by Dr. Isaac Rawlings and his colleagues, Dr. W. A. Evans, Dr. G. Koehler, and Mr. B. K. Richardson should offer no difficulty to the intelligent layman. Of more than local interest is the relatively long list of "biologics" distributed free of charge, apparently from 1922 onwards; in addition to diphtheria antitoxin and small-pox vaccine, the list includes diphtheria toxin and toxin-antitoxin, typhoid vaccine, and silver nitrate solution for the prophylaxis of ophthalmia neonatorum. Antirabic vaccine is given free to poor people only. To the use of toxin-antitoxin is ascribed the decline of the death-rate from diphtheria from 22·2 per 100,000 in 1921 to 5·7 in 1926. Antityphoid vaccination, advocated since 1911, was largely used for prophylaxis during the flooding of populated areas in Southern Illinois in 1925. Field laboratories were instituted for use in outbreaks in out-of-the-way areas; they have also been used for the diagnosis of glanders and venereal disease, milk bacteriology, and general laboratory work. Up to 1915 a monthly bulletin was published for a medical audience, since then it has been popular in character; the Division of Public Health Instruction possesses a motion-picture library containing some 80 films for gratuitous loan throughout the State. The report deals with some matters of historical interest. Dr. Rawlings does not admit that syphilis wiped out the mound builders who occupied the shores of Lake Michigan before the Indians came there, and he makes no pronouncement as to whether the Indians infected the whites with syphilis or vice versa. He arraigns the Indians for their failure to adopt systems of sewage and refuse disposal, and for their liability to rheumatism and malaria. Sagacity is, however, shown in their frequent removal from fouled sites which enabled them to avoid typhoid fever; nomadic open-air life accounts for their relative escape from tuberculosis. Names of world-wide interest occur in the story—e.g., Marquette, George Washington who died of "cynanche," Alexis St. Martin, and Dr. Beaumont, Abraham Lincoln, several members of whose family died of "milk sickness." Readers brought up on Osler's Medicine will be prepared for the mention of typho-malarial fever, a combination of diseases not common in other countries. Dr. Rawlings is embarking on rough seas when he suggests that "typhoid fever may have evolved" and that "typhoid bacilli may be evolving back into the Salmonella group to produce food poisoning or even harmless bacilli right now and every day, and here." Certainly it is difficult to answer the questions—what becomes of all the typhoid carriers and why are they spreading so little typhoid? The same questions were asked 20 years ago in the Klinisches Jahrbuch. During Sir William Hamer's tenure of office at the London County Council a large reduction of typhoid fever occurred in the metropolis while the "carrier" question was purposely ignored. The report may be studied with profit for its sidelights on epidemiological theory and practice.

[4] V. L. Andrews: Philippine Jour. Sci., Sect. B. 7, 1912, p. 67.

WOMEN IN INDUSTRY.

THE place of women in modern industry has often been discussed, and the suggestion has been made that her place is in the home rather than in the factory; but appeals to the past, as have been made by such writers as Thomas, Havelock Ellis, and Sir J. Fraser, establish that the home of old not merely held the cradle but was the tribal workshop, and that industries originated in domestic activities started by women. Only in comparatively recent times did the inventive faculties of men bring machines into existence, and with them modern industrial methods which have carried much of the work of the woman from the home to the factory and placed it in the hands of the man. He, however, is no less a stranger there than is the woman, the factory is new to both; but the woman can justify her presence by pointing out that she has only followed her occupations. Interest in such considerations turns on the proof that throughout the ages woman has been accustomed to perform tasks calling for physical strength and endurance, tasks indeed heavier and more strenuous than those which they perform in our factories and workshops to-day. When the question is asked what effort she can sustain without injury and even with advantage, until recently no reply, based on accurate observations, could be given. There has, however, just been published[1] by the Industrial Fatigue Research Board the result of accurate and painstaking investigation into the physique of women in industry and their physical capacity. This report is consequent upon, and confirmatory of, an earlier inquiry[2] into the question of carrying. The metabolic cost of carrying loads seems to depend, in large part, on the disposition of the load; while any load which brings about any considerable departure from the erect posture, especially if this be associated with induced abnormality of gait, inevitably leads to a high physiological cost. The first part of the report presents data gathered from 4366 females, aged from 14 years upwards, some being college students, but most of them factory operatives. Such material has been collected before for males, in connexion with army recruiting, and deductions drawn from the new observations are found to fall in line with those based on male records. Mental activity is associated with physical development, the students being taller, heavier, and stronger than the operatives; moreover, they are stronger per unit of height and weight. Apparently mental activity enables the muscles to be used more effectively. This conclusion accords with that of Martin in America: "The most striking feature with regard to her strength is its co-relation with mental activity rather than with muscular development." The same underlying principle was found among the industrial group, since the members of an unemployed group were of equal weight but of less height, therefore smaller and stouter than their employed sisters, and they were on the whole less muscular as proved by the tests. These tests consisted in pulling against a recording spring.

[1] The Physique of Women in Industry. By E. P. Cathcart and Others. Industrial Fatigue Research Board. Report No. 44. H.M. Stationery Office. 1927.
[2] The Effects of Posture and Rest in Muscular Work. Report No. 35. Ibid.

gripping and crushing between both hands; in fact, the attributes of the unemployed group certainly suggested that they were less employable and so had either failed to obtain employment or had drifted out from it. The second part is concerned with determining the optimum load for carrying. As a result of careful experiments, described in detail, on the metabolic cost of human porterage by various methods, and its effect upon pulse and blood pressure, the conclusion is reached that loads for women should not exceed 40 per cent. of the body-weight for continuous carrying, and 50 per cent. for incidental or occasional carrying. Translated into average weights, these percentages are about 45 and 55 lb. respectively. Field investigation of practice in many widely different industries, including the chemical, tinplate, engineering, pottery, textile, brick-making, and paper trades, revealed that women tend to conform closely to the weights suggested above; they are generally self-protective in their choice of the size of load, and know to a nicety their own capacity. But young persons, particularly young lads, tend to tackle weights outside what is reasonable; this group of operatives needs supervision. Where heavy work is continuous the maintenance of a steady rhythm is of great assistance to the ease with which energy can be expended. Legislation regarding weight-carrying in different countries is given in an appendix, reference to which establishes the need which exists for such a scientific investigation of the whole subject as that which is now before us. It is an example of research carried out with forethought by a team of investigators whose observations and data have been treated with skilled statistical method. Little doubt, therefore, can be felt that the conclusions arrived at, even though tentatively put forward, approximate closely to certain facts.

THE MANAGEMENT OF LACTATION.

NOTHING is commoner in discussions on breast-feeding than reiteration of the statement that demand creates supply, and medical opinion in this country and America generally favours the view that 3 to 4-hourly feeding (five or six feeds a day with no night feeding) provides the amount of stimulation desirable to maintain the function of lactation. On the continent more frequent stimulation is recommended, Marfan and Variot in France, and Finkelstein in Germany, advocating 3-hourly or even 2½-hourly feeding. In a recent paper[1] Dr. Margaret Emslie describes an investigation which she carried out over a period of six years among breast-fed infants attending the welfare centres at Croydon, with the objects of determining (1) whether there is a lactatory "zone of efficiency" as in other physiological functions, with wider "thresholds" than those suggested by 2-hourly maximal or 4-hourly minimal stimulation; (2) whether the result of mammary activity, as shown by the nutrition of the child, varies with the amount of stimulation; and (3) whether, within the zone of effective action, there is a point of election which will provide the optimum for both mother and child, nervous as well as physical factors being taken into account. The cases dealt with included 103 infants who were fed four times a day and a small group of ten infants whose feeds were reduced to a total of three a day, usually for reasons connected with the mother's health and ability to continue nursing. In the early stages of the experiment (1920–21) the transition from 3 or 4-hourly feeding was carried out so gradually that the system of four feeds a day was only completed by the sixth month; later, when the well-being of both mother and child on the smaller number of nursings had proved itself, the process was speeded up, and the four-feeds-a-day system was often fully established by the sixth week, and sometimes sooner. The mother's understanding and coöperation were secured in every instance, and no single case occurred in which it was necessary to return to the old routine, either because the baby failed to gain the regular average of 6 to 8 oz. a week which was taken as the standard of success, or because the mother was suffering from over-distension of the breasts or failure in the supply of milk. Tests carried out occasionally showed no undue increase in the amount ingested at one nursing, and no abnormality or change in percentage composition of the milk. The average weight-curve of the 103 babies fed four times a day began and ended (at 12 months) practically at the normal level, with a surplus of 1¼ to 2 lb. above the normal curve between six and eight months. Among the ten babies who were reduced to three feeds a day the age of the mothers varied between 24 and 43 years, and the position in family of the baby between first and fourteenth; neither of these factors appeared to have any direct influence on the capacity to maintain lactation under greatly reduced stimulation. Dr. Emslie states that, while the condition of the child is regarded as the measure of success in lactation, the comfort of the mother as the chief factor in that success is inadequately recognised. She further maintains that it is precisely the good and conscientious mother, who realises her responsibilities to her husband and her other children, who is the most apt to resort to artificial feeding, owing to the continuous pressure under which her daily duties are performed and the interruption of her work at inconvenient hours for the purpose of suckling her infant. The régime adopted by Dr. Emslie avoided these drawbacks, the baby's meal-times being fixed at 8 A.M., 12 noon, 4 P.M., and 8 P.M., and this relief of both physical and nervous strain on the mother may have, she believes, a valuable influence on the continuance of lactation without impairing the health or progress of the child.

[1] The Function of Breast-feeding, Archives of Disease in Childhood, October, 1927.

THE CAREER OF FRANCIS HOME.

AT a meeting on Dec. 7th of the Historical Section of the Royal Society of Medicine, Fleet-Surgeon W. E. Home read a paper on Francis Home, 1719–1813, first professor of materia medica in the University of Edinburgh. As an Edinburgh student he was an early member of the Medical Society, and on the outbreak of the war of the Austrian Succession in 1742, he served in Flanders as medical officer to the 6th Inniskilling Dragoons. To prevent fever, Francis Home in 1748 ordered that dragoons "shall drink no water without it be first boiled, and a little brandy or gin mixt with it." He was at Dettingen and Fontenoy, gained the approval of Sir John Pringle, the Physician-General, and studied at Leïden in the intervals between campaigns. In 1750 he took the M.D. of Edinburgh, noting in his thesis that he had not in Flanders seen a case of fever with a temperature above 104° F.; this was the first clinical report of temperature in fever by a British physician. Though Boerhaave, primarily a chemist, was dead, he was still the inspiration of Leïden, so probably much attention was given to chemistry there. At any rate, Home began at once to write on this science, first analysing the water of a spring at Dunse (1751); in 1756 he published lectures on "bleaching," advising dilute sulphuric acid for "souring" cloth, which greatly helped the linen industry for the next 30 years. The Government paid him £100 for his experiments, and his book was translated into German. In this same year was published his "Principles of Agriculture," said to be the first attempt to bring chemistry to the aid of agriculture. For this book he was given a gold medal; a French translation was issued in Paris in 1761, with the approval of the French King, though we were at war with France, and two German editions came out, the translator declaring Home was the first to show that plants got some of their food from the air. In 1758 appeared his "Principia Medicinæ," long a standard text-book, and in the same year, as several children died of measles in Edinburgh, he tried to lessen the risk by

inoculation, as had been recently done for small-pox. He made the attempt in 12 cases, and noted that the inoculated disease had a shorter incubation and a milder course than the natural; thus he seems to have anticipated the recent work on measles prophylaxis. In 1765 he wrote on "croup," suggesting that laryngeal diphtheria was a different disease from the angina maligna that everyone knew. This error was not completely set aside until the time of Bretonneau (c. 1820). In 1765 Home was physician to the King, and in 1768 was appointed to the newly established chair of materia medica and took his turn in charge of the university clinical ward in the Royal Infirmary. In the library of the Royal Society of Medicine are MS. notes of his lectures on materia medica (1775) and clinical medicine (1776–77). In his writings he shows a good grasp of scientific method, but is much hampered for want of modern equipment. In his last book, "Clinical Experiments" (1781), he announces that diabetic urine can be fermented with yeast, and with J. Black, professor of chemistry, reports the amount of sugar in this urine. In 1798 he retired from his chair, being succeeded by his son, James Home. He died in 1813, and is buried at Earlston, in Berwickshire, where he had bought a small estate, Cowdenknowes.

THE DIAGNOSIS OF LOBAR PNEUMONIA IN CHILDREN.

LOBAR pneumonia, says Dr. E. Apert,[1] is sent to hospital with a wrong diagnosis more often than any other disease of childhood. In cases diagnosed as meningitis or acute appendicitis the true condition is often found to be pneumonia, whilst in those originally classed as pneumonia it proves to be pleurisy, acute tuberculosis, typhoid fever, or scarlet fever. For the avoidance of these mistakes it is well, he says, to bear in mind that in childhood the disease is mild, so that even patients whose temperature is high at the beginning of an attack may not seem ill to an unobservant mother. The rigor of onset is absent, but is sometimes replaced by a convulsion, and this is often accompanied by other possible signs of meningitis such as stiffness of the neck and slight spasm of the hamstrings. Otherwise, however, there is no evidence of meningitis; the attitude of the child is different, and the cerebro-spinal fluid is generally normal, though it occasionally shows a very slight increase of cells and albumin, whilst there are usually positive signs which indicate the correct diagnosis of pneumonia. Of these labial herpes is important. Often the papules are very small and transient, disappearing within 24 hours, but Dr. Apert considers that they are valuable evidence of pneumonia and must be carefully looked for. Pain in the abdomen, referred from right-sided pneumonia, may superficially resemble acute appendicitis, especially if it is accompanied by vomiting, as it may be in either condition; but careful palpation will almost invariably distinguish the two. By gentle and progressive palpation it is nearly always possible to press right down into the right iliac fossa in pneumonia without causing the child pain, and only very rarely does pneumonia cause abdominal pain which truly resembles that of appendicitis. Dyspnœa is absent in children, except when consolidation is extensive, and the child lies on either side without discomfort. Below 12 years of age expectoration of sputum is uncommon, but in young children it can sometimes be produced by putting the finger down on the base of the tongue and causing a spasm of coughing with the ejection of sputum on to the back of the tongue, whence it can be removed with the finger. It is then sometimes tough and reddish, as in adults. The cough is less violent than in adults and less restrained than in pleurisy; its presence is very important, however, in directing attention to the chest. The physical signs are much less marked than in adults and are absent when consolidation is confined to a small patch; dullness is best elicited by very light percussion. Alteration in breath sounds can often only be detected by very careful auscultation, and changes are much more variable than in adults, the sounds being always harsher. It is important to listen in the axilla as sounds tend to be conducted there by the fissures in the lung. Tests of vocal resonance and fremitus are of very little value in children, and sometimes tubular breathing does not make its appearance until after the crisis. These facts, Dr. Apert points out, account for many of the difficulties of diagnosis, but errors can for the most part be avoided if they are recognised and if a methodical history is taken from the parents.

[1] Diagnostic de la pneumonie franche aiguë chez l'enfant. By E. Apert. Monde Médical, Nov. 15th, p. 937.

PSYCHOLOGY OF MILITARY PRISONERS.

THE future of court-martial prisoners in disciplinary barracks in the United States, who return to duty on conclusion of sentence, has been made the subject of inquiry in the *Military Surgeon* for November by Lieut.-Colonel E. King, Medical Corps, U.S. Army. This future is found to be often unsatisfactory, the men proving themselves a risk to the service, being essentially undisciplinable. Colonel King believes that every such case should have a special medical examination to decide whether his discharge should not be applied for. In fact, of 165 such men in three years 30 per cent. appeared so unsatisfactory that their discharges were applied for, and 25 per cent. more seemed to merit similar treatment. In the suitable cases discharges would certainly save money, and Colonel King points out that the process would increase efficiency of units and lessen criticism of the service. He concludes that deserters, particularly those who desert early in their service, are military weaklings, and that all deserters should be sent before courts-martial, it being useless to keep in the army deserters of short service. Important psychological questions are opened up by such conclusions, and comparisons would be interesting between the American circumstances and those which prevail in the armies of other nations, consideration being had to the methods of recruitment.

IMPURITIES IN ETHER.

IT has long been known that when light acts on ether in the presence of oxygen peroxides are formed. At first it was believed that hydrogen peroxide was the only product, but later it was shown that during the oxidation a substance was formed which has an intensely pungent odour and exerts an irritating action on the skin and tongue. Although many chemists, including Berthelot, Dunstan, and Wieland, have worked on this subject, none has been able to determine beyond doubt the chemical composition of this organic peroxide. Wieland considers that it is dihydroxy-ethyl peroxide. Hitherto all attempts to obtain it in pure form have failed on account of the readiness with which it explodes. A paper read last week before the Society of Public Analysts by Mr. G. Middleton, B.Sc., and Mr. F. C. Hymas, B.Sc., two associates of the Institute of Chemistry attached to the staff of the British Drug Houses, Ltd., gave a useful review of the methods in general use for detecting peroxide in ether. They find, as others have found, that different samples of ether vary considerably in the readiness with which they undergo change in daylight in the presence of oxygen, and they express the view that entire freedom from both peroxide and aldehyde is essential in securing the stability of ether. In order to carry this into effect the official tests adopted by the different pharmacopœias for detecting peroxide in ether may need some revision; ten of these, including the British Pharmacopœia, adopt the potassium iodide test. The method of the present British Pharmacopœia is sensitive to one part of peroxide in two millions; Middleton and Hymas describe tests by which one part in 50 millions of ether can be detected and estimated. A colourless solution of ferrous thiocyanate is run into a bottle containing

the ether to be tested, the volumes being adjusted so that the vessel is filled. It is then stoppered and shaken, and the colour produced is observed by comparison with a standard solution of cobalt sulphate or by means of tintometer glasses. In this way a quantitative figure can be given in terms of parts per million, and the authors suggest an upper limit for the amount of peroxide to be permissible, which is very much less than that which can be detected by the present official pharmacopœial test. Routine testing over several years has shown that the ferrous thiocyanate test is easy to apply and gives consistent results. By its aid it should be possible readily to eliminate samples of ether which are unsuitable for narcosis.

AN INTERNATIONAL MEDICAL ASSOCIATION AND CENTRE.

IN July, 1926, a body called the Association Professionnelle Internationale des Médecins was formed by a group of 14 delegates of medical associations who chose as their secretary-general Dr. Fernand Décourt, President of the Union des Syndicats Médicaux de France, and selected Paris as their headquarters. On Sept. 29th of this year the delegates met again in Paris, this time in the fine new building at 10, Place d'Iéna, which has recently been opened as a Foyer Médical Franco-International. Twenty-two countries have now joined the Association, each of which has designated as its correspondent either the president or the secretary of the national association. The representatives present were Drs. Schneider (Germany), Stritzko (Austria), Schaeffer (Denmark), Fortuyn (Holland), Fedders (Lithuania), Schaeftgen (Luxemburg), Przyborowski (Poland), Tomesco (Roumania), Rystedt (Sweden), Vuilleumier (Switzerland), and Farkas (Jugoslavia and Czechoslovakia). Dr. Alfred Cox (England) was present in an unofficial capacity, the British Medical Association not having decided whether it will join the International Association. It is stated that several important professional questions have already been taken up by the Association and liaison has been established with the International Labour Office in Geneva. The Foyer Médical has been built as a commercial undertaking, the capital having been subscribed by investors. It contains comfortable reception rooms, restaurant, bar, tea-room, and reading and writing rooms. A tourist bureau provides information on hotels and professional information on clinics, hospitals, and specialists can be obtained. The aim of the promoters is to make it both a club and a centre of information for doctors of every nationality.

THE RETIREMENT OF PROF. MACALLUM.

THE retirement is announced of Dr. A. B. Macallum, Professor of Biochemistry in McGill University, Montreal, from the chair which he has filled with much distinction since his translation seven years ago from Toronto. Prof. Macallum began at Toronto, where he was lecturer in physiology, a full experimental course in physiology and biochemistry in 1886, and his methods were of a thorough sort not familiar at that time. The students were made to do the experiments themselves, which were at first of a simple kind, but the course was complete in three years, almost as complete as it is anywhere to-day—and nothing exactly like it obtained elsewhere, except at Harvard, where Prof. Bowditch had an experimental course from 1892 on. The students were gradually taught to appreciate the modern views of physical chemistry (derived from Van't Hoff's and Arrhenius's conceptions of physical chemistry) and colloidal chemistry as applied to biochemistry. In 1891 Macallum was appointed professor of physiology and biochemistry at Toronto, and the researches to which he gave particular attention were those on the origin of hæmoglobin from the chromatin of the hæmotoblasts, which led to the attempt to determine whether chromatin is an iron-holding compound. This was demonstrated by the results of research of three years, which showed that the chromatin of every cell is an iron-holding compound, and that hæmoglobin is, as it were, a degeneration product of chromatin. This explains the absence of a nucleus from the red blood corpuscles of mammals. There is a nucleus in the red blood corpuscles of the lower vertebrates, but the chromatin in it is in a degenerated form and because of this nucleus the red cells of these lower vertebrates cannot bring about cell division. In 1897 he was made F.R.S., and there followed researches into the absorption in the intestines of iron compounds, into the inorganic composition of the blood plasma in vertebrates and invertebrates with closed circulation, and into the inorganic composition of the cell, with the discovery of a method for detecting microchemically potassium, chlorine, phosphorus, calcium, iron, and copper. In 1920 Macallum, now administrative chairman of the Canadian Research Council, was appointed professor of biochemistry at McGill, and his most recent researches have been into surface tension and its effects on determining the distribution of salts in living matter; the problems here are now being investigated.

All physiologists will join us in wishing Prof. Macallum an extended period to enjoy leisure, and—we may be certain—to continue the studies to which he has devoted his life. He is succeeded in the chair at McGill by Prof. J. B. Collip, well known in association with the discovery of insulin, which he made available for clinical purposes, and later for his parathyroid research.

WE have received a copy of the eighty-fourth annual issue of the Medical Directory, bringing the information obtained in 1927 fully up to date. The volume has increased in size by some 34 pages since last year, largely owing to the inclusion of 731 more names. This increase is conspicuous in three of the classified sections—namely, London (plus 114), Provinces (plus 521), and Wales (plus 46); whilst both Scotland and Ireland show distinct reduction of numbers—83 and 72 respectively. The diminution of 35 in the Services is but a continuance of the tendency observed since 1922, but the remarkable increase in the section of Practitioners Resident Abroad continues unabated, this year amounting to 240. The useful information at the front of the Directory is largely unchanged, trifling inaccuracies in the section of Titles Conferred having been made good, although there is still a curious survival under Appointments to the Royal Family. We greatly welcome the re-insertion of the list of Coroners in England and Wales, to which the editors have added an invitation to readers to supply corrections. The list of certified masseurs has increased by a column or two, and practitioners will welcome the Directory of Nursing Homes, which is a new feature of the 1928 edition, to be found on pages 413–14. The Directory, which remains of convenient size and format, may be had from Messrs. J. and A. Churchill for the usual price of 30*s*.

Prof. Robert Howden retired on Sept. 30th from the chair of anatomy in the University of Durham College of Medicine, and it is felt that many of his old students, colleagues, and friends will welcome an opportunity to express their gratitude for his work as anatomist, teacher, and administrator. He has served the medical school devotedly for 38 years, whilst the profession at large has profited by his admirable editing of "Gray's Anatomy." The proposed testimonial will take the form of a small memento and a cheque and it is asked that contributions should be sent to Sir Joseph Reed, at the College of Medicine, Newcastle-on-Tyne, by Dec. 31st.

Mr. Horace H. Rew has been appointed Secretary of the Conjoint Examining Board in place of Mr. F. G. Hallett, who resigned, as we have already stated, as from Dec. 5th.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLIV.—THE TREATMENT OF PHLEBITIS.

PHLEBITIS occurs in two forms, (1) the plastic, and (2) the suppurative. In the plastic form of phlebitis inflammatory changes occur in the endothelium of the veins and as a result a clot or thrombus appears within the vein. Organisation of this clot by fibrous tissue may occur, the vein being transformed into a fibrous cord. In other cases the clot becomes softened and broken down and the circulation of blood through the vein is resumed. During this process a portion of the clot may become detached and pass to the lungs, resulting in pulmonary embolism. In the suppurative form the vein and the clot which it contains become invaded by pyogenic organisms; leucocytes enter the clot and cause it to break down into a purulent fluid.

Ætiology of Plastic Phlebitis.

Plastic phlebitis may be a result of (1) infective fevers, especially typhoid fever, (2) gout, (3) post-operative thrombo-phlebitis, (4) puerperal phlebitis or phlegmasia alba dolens, or (5) trauma, usually but not always, in cases when the veins are varicose.

Preventive Treatment of Plastic Phlebitis.

In the *infectious fevers*, especially typhoid fever, phlebitis of the lower limbs is not uncommon. The diet recommended in typhoid fever was at one time confined to milk and this substance contains a considerable amount of calcium salts (1½ g. per litre: R. Hutchison). It is probable that in a long illness the coagulability of the blood will be increased on an exclusively milk diet and as a prophylactic measure in typhoid fever other liquids, such as beef-tea and lemon-water, should be given to avoid a diet solely composed of milk.

In *gout*, where the phlebitis is often multiple and sometimes symmetrical, the diet should be regulated and appropriate medical treatment, such as colchicine, atophan, and Contrexéville water should be prescribed.

In *post-operative thrombo-phlebitis* we have a condition which needs the urgent consideration of both physicians and surgeons. There is an alarming increase of pulmonary embolism and many deaths result from it after laparotomy. The work of J. G. Clark,[1] who has brought forward many convincing arguments to support his thesis, should be better known. He concludes that post-operative thrombo-phlebitis results from trauma to the deep epigastric vein during manipulation of the abdominal wall at operations. He has shown that the clot spreads to the deep epigastric vein on the opposite side and to the iliac vein. The long interval, 8–15 days, which intervenes between the operation and the appearance of the thrombosis in the femoral and iliac veins suggests a slow process with gradual extension of the clot into the femoral vein from a focus some distance away. The absence of much fever and the fact that the pulse is slightly, if at all, raised in rate suggests a traumatic lesion of the vein rather than an infective one. In one case, after a patient had been operated upon and had developed a typical thrombo-phlebitis with œdema of the right leg, it became necessary to perform a second laparotomy. At this second operation, two months later, both the epigastric veins were found to be tense, hard, and as large as goose quills, while the right one was found to be decidedly varicose and to contain phleboliths. The block in the iliac vein may or may not be complete; if it is complete we get a swollen œdematous leg, whilst if it is incomplete, pulmonary infarction may occur without swelling of the lower limb. It is clear from this that surgeons should use the utmost gentleness in manipulating the abdominal wall during operations. I am strongly against the modern habit of trying to remove an adherent appendix through the same abdominal wound that has been used for inspection or operative procedures in the upper abdomen. A great deal of stretching and pulling of the parietes occurs and it is far better to make a second incision over the appendix, if its removal is required after an operation on the upper abdomen. It is also clear that after abdominal operations the patients should be encouraged to move the legs as soon as possible so as to prevent stagnation of the circulation. W. A. Lister[2] has shown that the commonest source from which massive emboli arise is in the iliac veins and their larger tributaries, and he suggests as a preventive measure that movements of the abdominal wall should be encouraged after operation as soon as possible. He also suggests that massage to the lower limbs and breathing exercises should be undertaken as soon as possible after an operation on the abdomen. Another factor which may be of some importance in producing stasis in the femoral vein is the acute flexion at the groin which is produced by placing a bolster beneath the knees in order to prevent the patient slipping down in bed. The use of this support should be condemned.

After operation it is advisable to begin, on the third or fourth day, to give a mixture containing potassium citrate and ammonia three times a day as a prophylactic against clotting.

Prophylaxis against *puerperal phlebitis* is similar to that already described against venous clotting after operation. The influence of puerperal sepsis in this connexion is, however, very important.

Trauma is a cause of phlebitis usually, but not always in cases where the veins in the lower limbs are varicose.

Treatment of Varicose Veins.

The treatment of varicose veins may be summarised as follows:—

(*a*) *Support.*—The use of crêpe velpeau and india-rubber bandages and elastic stockings has been condemned on insufficient grounds. They certainly help to protect the veins from trauma and prevent their over-distension, and in many cases this is the only treatment necessary.

(*b*) *Spa Treatment.*—A great many cases of varicose veins have been greatly benefited by treatment at Bagnoles de l'Orne in France. In my experience the greatest benefit from the hot springs of the spa has been in cases where thrombosis has already taken place in the veins and more or less œdema of the lower limb has resulted.

(*c*) *Surgical.*—Removal of localised bunches of varicose veins may be undertaken by surgical excision. In many cases where the valves of the veins have become incompetent and there is great distension of the veins when the patient stands erect, Trendelenburg's operation of ligature of the saphenous vein in the groin has been used successfully.

(*d*) *Injection.*—In 1919 Sicard[3] proposed to inject fluids into the varicose veins with a view of producing a sclerosing thrombosis. Five c.cm. of a solution of 20 per cent. sodium salicylate are injected into the vein, which becomes hard and a firm clot is produced, which eventually leads to shrinking and disappearance of the varix. Apparently embolism does not occur as the result of this method of treatment.

(*e*) *Treatment when Phlebitis and Thrombosis has Occurred.*—Rest in bed is essential. The limb should be slightly elevated to favour return of the venous circulation. The inflamed vein may be gently painted with liniment of iodine and then covered with warm cotton-wool. If the whole leg is swollen it should be entirely encased in warm wool and covered with thin mackintosh. If the pain is severe, the skin over the painful area may be smeared with a cream made with green extract of belladonna with twice its weight

[1] Univ. of Penna. Med. Bull., 1902, xv., 154.

[2] THE LANCET, 1927, i., 111.

[3] Presse Médicale, June 2nd, 1926.

of glycerine. Massage and friction must not be employed for at least three weeks.

To prevent further clotting, citrate of potash and ammonia should be given, as in the following prescription :—

℞	Potass. citrat.	gr. xv.
	Sp. ammon. aromat.	℥ xv.
	Ammon. carb.	gr. iv.
	Glycerini	℥ xx.
	Aq. menth. pip.	ad ½ oz.

Sig. A tablespoonful in water every four hours.

After three weeks, if the leg remains swollen, gentle friction to the skin may be employed but deep massage is contraindicated.

Pulmonary Embolism.

The symptoms of pulmonary embolism appear in most cases with dramatic suddenness. Some 10 to 14 days after an operation or after parturition the patient is suddenly seized with violent pain in the chest. The breathing becomes very difficult and the distress of the patient is very great. If the clot is large enough to block the pulmonary artery or one of its larger branches, the patient may die in a few minutes. If, however, the colt is not so large, the patient recovers and within the next 24 hours a pleural rub may be heard and the patient will bring up a quantity of dark-coloured blood. Within two or three days a dull area may be found at the base of one of the lungs and tubular breathing and increased vocal resonance may be elicited over this area. Indications that pulmonary embolism may occur after an operation are slight. After the post-operative pyrexia has settled down to normal on the third or fourth day, the temperature, instead of remaining quite normal, may show slight signs of oscillation, rising to 99° or 100° F. without any obvious cause. There is usually no pain in the lower limbs, but just before the embolus takes place there may be a little œdema of one or both feet. The prevention of pulmonary embolism is that of thrombosis in the iliac veins. Once thrombosis has taken place the patient must be kept absolutely still and any respiratory exercises and movements of the abdomen and legs must be immediately stopped. Should a clot in a varicose vein show signs of ascending the leg the inflamed vein should be removed and the saphenous vein tied in the groin. It is clear, however, that operative measures on a clot in the iliac vein must be of doubtful value, though in some cases they have been undertaken. When the patient is seized by the crisis of pulmonary embolism, the violent spasm and acute pain are best relieved by a small dose of morphia. In many cases œdema of the lung supervenes and the chest becomes full of bubbling râles. When this occurs one-fiftieth of a grain of atropine should be injected. If there is much cyanosis, oxygen inhalations may be tried, and if the pulse becomes feeble strychnine, digitalis, and camphor should be injected. When once a pulmonary embolus has occurred it is obvious that another portion of clot may become detached and a second attack may follow, and I have seen cases where three or four small emboli have passed into the lungs during the course of two or three weeks and yet the patient has recovered. In view of this, it is essential that the patient should be kept absolutely quiet in bed for a period of four to six weeks until it may be hoped that the thrombosis in the iliac vein has become fully organised.

Ætiology of Suppurative Phlebitis.

The pyogenic organisms reach the veins from a focus of suppuration around them. The most common varieties are the result of (*a*) mastoid disease, resulting in septic phlebitis of the lateral sinus and internal jugular vein; (*b*) facial carbuncle or boil resulting in infection of the angular vein and cavernous sinus; (*c*) septic conditions in the abdomen, such as appendicitis, gastric ulcer, and tuberculous glands resulting in portal pylephlebitis; (*d*) septic phlebitis of the iliac veins may follow certain cases of puerperal infection or uterine and bladder diseases.

Treatment of Suppurative Phlebitis.

(*a*) The infective focus must be drained or removed—e.g., the mastoid process must be drained or the appendix removed.

(*b*) Whenever possible a ligature must be placed on the vein between the affected area and the heart—e.g., the jugular vein must be ligatured at the root of the neck in cases of lateral sinus thrombosis.

(*c*) When this has been done, the inflamed vein should be thoroughly laid open, the septic clot removed, and the cavity thoroughly cleansed and drained whenever anatomical conditions allow of this being done.

After these essential surgical procedures have been carried out, the patient's strength must be maintained by careful feeding; alcohol and other stimulants should be given when needed, while antistreptococcal serum may be given to combat the toxæmia.

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Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1926 statistics of four English and one Scottish county :—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.						Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.		Diarrhœa, &c., under 2 years.	Infant mortality.	Maternal mortality from childbirth.
Lancashire .. .. (1,788,500)	15·6	12·0	0·81	1·29	2·2	1·7		7·5	80	6·7
Durham .. .. (996,700)	22·9	11·5	1·11	0·99	2·2	1·1		11·0	84	5·6
Cheshire .. .. (654,500)	15·7	11·2	0·74	1·37	1·8	1·6		6·2	70	3·6
Somerset .. .. (399,500)	15·2	11·6	0·67	1·43	1·6	1·9		4·3	52	3·4
Stirling* .. .. (79,810)	22·8	10·3	0·64	1·07	1·9	1·2		6·6	70	4·4

* The figures refer to the county landward—i.e., excluding the burghs.

Lancashire.

Dr. J. J. Butterworth reports that the death-rate from cancer has steadily increased from 0·54 per 1000 in 1900 to 1·29 in 1926. During the last ten years the percentage of male deaths has gradually increased from 42·5 to 47·1. Congenital conditions accounted for 41 per cent. of the infant deaths and respiratory diseases for over 24 per cent. Operative treatment for tonsils and adenoids is not undertaken at the school clinics but only in hospitals by expert surgeons. During 1926 725 children received such operative treatment under the county scheme. The treatment of defects of vision is undertaken in the eye departments of hospitals or by part-time specialists in the county clinics. During the year 3343 children were treated under the county scheme. The dental staff consists of nine whole-time surgeons and one part-time, each assisted by a nurse or dental attendant. There are 18 clinics which serve about 33,000 children. Owing to the large number requiring treatment, the dentists concentrate on the younger groups of children

during the eruption of the first permanent teeth. They also treat expectant and nursing mothers and pre-school children.

The administrative county includes 19 boroughs, 83 urban, and 19 rural districts. Except for outlying parishes a constant plentiful and pure water-supply is available. In 99 of the 121 districts the local authorities carry out the scavenging. In 75 districts the contents of privy middens are still removed in the daytime. In 63 urban districts motor vehicles are used for the removal of refuse, but only in two of the rural districts. The county staff are making a survey of all the districts. At August, 1927, 70 districts had been covered. An exhaustive report is prepared on each area and sent to the local authority with request for observations as to the steps proposed to carry out the recommendations. Reinspections of the districts are made from time to time. Special inspections are made as required, in connexion with rivers pollution, milk-supply, outbreaks of infectious disease, &c. The time limits allowed by the various local authorities for the emission of black smoke are given. Seventeen authorities allow 10 minutes in the hour, four allow 12, and the urban district of Turton heads the list with 15. Such limits reduce smoke abatement to a farce. There is said to be a shortage of houses in 85 of the districts and "serious" or "considerable" overcrowding in four boroughs and four urban districts. The erection of new houses shows a marked increase compared with the previous year. Thus during 1926 8397 houses were erected and 3211 local authorities' houses were in course of erection at the end of the year, the comparable figures for 1925 being 6859 and 1692 respectively. Six joint regional planning committees have been established. The Manchester region includes areas in Cheshire, Derbyshire, and Yorkshire. The other five are for S.W. Lancashire, N.E. Lancashire, and in the neighbourhood of Lancaster, Preston, and Fylde respectively. The clean milk competitions promoted by the county council and the County Milk Recording Society do not as yet attract many competitors. There were 7 for No. 3 competition in 1926 and there are 15 for No. 4 competition in 1927. The public analyst, Mr. G. D. Elsdon, referring to the test introduced by his predecessor for determining the amount of dirt in milk, shows that there are far fewer samples containing dirt since this test was started. Thus in 1917 there were 453 dirty samples to 2457 clean. In 1922 there were 339 dirty to 2475 clean, and during 1926 not one sample of milk was returned as adulterated by dirt. Mr. Elsdon goes on to point out that much of this improvement is due to the fact that the once dirty milk has been cleaned by an efficient sieve or a centrifugal cleanser. He goes so far as to suggest that if these methods of cleaning dirty milk could be prohibited there would be an immediate improvement in the production of really clean milk. There were 111 notifications of small-pox with one death; and 159 notifications of encephalitis lethargica with 88 deaths. The county council is the maternity and child welfare authority for 75 of the 121 districts, and has a scheme in preparation to meet the puerperal fever regulations. There were 172 notifications of ophthalmia neonatorum; the details of the results are incomplete but include one case of total blindness and five of impaired vision. In December a handy woman was successfully prosecuted for practising as a midwife.

The county council has established two antenatal centres which are supervised by obstetricians from Manchester and Liverpool respectively; and have made arrangements for the admission of parturient women to 13 maternity hospitals or homes in different parts of the county. The orthopædic scheme has been greatly extended by an increased number of local authorities joining in. The Biddulph Hospital is expected to be ready for patients before the end of 1927. When this is completed there will be three areas covering most of the county, each with its base hospital, country hospital, and out-patient centres with the whole of the work conducted by orthopædic surgeons and nurses.

Durham.

Dr. T. Eustace Hill reports that 5791 cases of small-pox were notified with 11 deaths. In December a conference of medical officers of health and of medical officers of hospitals was held in Durham and recommended a more stringent enforcement of the Vaccination Acts and a pooling arrangement for isolation and small-pox hospitals. At the end of the year there were 592 hospital beds available for small-pox. There are 31 urban and 14 rural districts in the administrative county, and the county council is maternity and child welfare authority for all except the boroughs of Hartlepool, Jarrow, and Stockton and Whickham U.D. Dr. Hill thinks the scheme to comply with the puerperal fever regulations will involve considerable expense and will be no easy matter to work in a county area owing to the need for promptitude. He considers that the local sanitary authorities should be responsible for the bacteriological examinations. The county council has already arranged for the admission of puerperal fever cases to the Princess Mary Maternity Hospital, Newcastle, and are considering the questions of providing the services of consultants and special nursing assistance. There were 52 notifications of encephalitis lethargica and 43 deaths. During the last ten years, while the English death-rate from cancer has increased from 1·21 to 1·36, the county of Durham rate has increased from 0·73 to 0·99. Dr. Hill knows of no circumstances in the county, such as occupation, &c., which would explain the low cancer mortality in the county. He thinks it is probably due to a larger proportion of the population being at the lower age-periods.

Special antenatal sessions were held at 21 centres and at the County Maternity Home, Bishop Auckland, and the Richard Murray Hospital, Blackhill. The expectant mothers who attended during the year numbered 2425 (total births, 22,802). The work of the centres was considerably interfered with by their being used for the distribution of milk during the coal stoppage. There was no evidence of any starvation among those attending the centres; in fact, it was noticed that many babies were in better condition because they were more regularly fed and their mothers had more leisure to take them out and give them fresh air. The voluntary workers worked very hard during this emergency period, and an enormous amount of work was thrown on the health visitors by the distribution of dried milk and arrangements for free meals. During most of the period from May to the end of the year 30,000 expectant and nursing mothers and children under 3 years were in receipt of dried milk and meals free or at a reduced price. The cost for the year ended March 31st, 1927, of this provision was £95,945. Children between 3 and 5 years were provided with breakfasts and dinners at the 309 canteens organised by the Education Committee. Expectant mothers in the last three months of pregnancy had the option of milk or meals, but only 1 per cent. chose the meals because they could not leave their homes twice a day and sacrifice two hours daily for the purpose. Considering that all the cooking arrangements, &c., for the canteens had to provide for the daily feeding of over 100,000 individuals, the efficiency of the scheme was marvellous. Canteen committees were formed, boilers bought or hired, and fires were arranged either under penthouse roofs or in the open. Men, who had been army cooks, gave valuable service. Incidentally, many parents received useful lessons on the provision of good plain economical dinners for their children, and mothers were brought in touch with the work of the centres who had never been there before.

The number of confinement cases admitted to the five hospitals included in the county scheme numbered 790. The hospital beds available for tuberculosis cases, numbering 446, are insufficient, and there is a

waiting-list of about 200. An excellent new, specially built, venereal diseases centre was opened in the Stockton Hospital grounds during the year. Although 3924 new houses were built by the local authorities during the year and 3354 others are in course of erection, the shortage of houses and overcrowding are deplorable. Dr. Hill also laments the extremely unsatisfactory position of the rivers pollution question. To conclude on a bright note, however, the general death-rate and the infant mortality-rate were the lowest on record.

Cheshire.

Dr. Meredith Young reports that all the county schemes for the betterment of the public health have grown in size and complexity. The deaths from encephalitis lethargica in the county in 1926 were 31, in 1925 25, and in 1924 32. Dr. Jean R. Shaw, the maternity and child welfare officer, says the County Nursing Association is extending its activities and each year there are fewer areas without the services of a trained midwife. This association is successful in securing midwives with a high standard of efficiency. There are six county midwives working in districts not touched by the Association. Each of these receives a grant of £60 a year until she has a practice sufficient to support her. Altogether there are 259 practising midwives, 215 trained and 44 untrained. Nine are unable to take the temperature or pulse. One midwife, living outside the county, engaged to attend a woman, who had a history of ill-health, only summoned a doctor when the patient was moribund after labour. Her name was removed from the midwives' roll. Monthly lectures have been held for the midwives at seven centres and were well attended. The county council also give grants to allow two of the midwives, who have been practising in the county for five years, to attend a "refresher" course at Plaistow every year. About 59 per cent. of the mothers were able to breast-feed their babies entirely at the end of six months. This is the lowest percentage of breast-feeding since infant welfare work started. Owing to the shortage of houses, many young couples are unable to start housekeeping in their own homes, and in consequence have needed the help of maternity homes. Up to the present the antenatal centres conducted by local doctors have not proved a success, but an antenatal centre conducted at Stalybridge by a specialist from Manchester was much more popular. At Congleton the local panel committee objected to the establishment of an antenatal centre under the supervision of an obstetric specialist living in the neighbourhood. Dr. Young says the whole question of rivers pollution needs serious consideration and that his staff ought to be strengthened by the inclusion of assistants with engineering and chemical knowledge. The grosser pollutions are connected with trade wastes, and in the case of Cheshire the most serious ones are generated at collieries in Staffordshire, which are situated in one of the Cheshire water-shed areas. In most of the districts housing is going forward at a fairly rapid rate, but as the population is growing it will be a good many years before the shortage is overcome.

Somerset.

Dr. W. G. Savage says there were 37 cases of encephalitis lethargica and 25 deaths. The county council authorise eight cases at a time of non-pulmonary tuberculosis being maintained at the Treloar Hospital, and other cases are sent to the Bath Orthopædic Hospital. The tuberculosis death-rate was the lowest on record and is only two-thirds of what it was at the beginning of the century, the main decline being in pulmonary tuberculosis. Unused buildings at Quantock Sanatorium were again used as a summer camp, with much benefit to 40 girls and 40 boys. The tuberculosis officer, Dr. L. J. Short, shows that the dispensaries are well used for consulting purposes. Of 1683 new cases, 354 had no bacilli in their sputum. Of those with bacilli in their sputum 15 were at stage 1, 88 at stage 2, and 52 at stage 3. Of the remaining cases, 96 were non-pulmonary tuberculosis, 929 were not tuberculous, and 149 were still under observation at the end of the year. During the years 1912–26, 7185 patients came under treatment, of whom 32 per cent. are said to be cured, 23 per cent. to be at work, 9 per cent. to be not working, 25 per cent. to be dead, and 11 per cent. to have been lost sight of. Of the patients admitted to Quantock Sanatorium during the year 91·6 per cent. were unfit for any work and 8·4 per cent. were fit for light work. Of the patients discharged, 54·4 per cent. were fit for full work, 24·4 per cent. for light work, and 21 per cent. were unfit for work. The average duration of stay since the sanatorium was opened in June, 1925, has been 140 days. Antenatal work by the midwives is growing slowly. Antenatal cards are supplied to them and examinations of urine, &c., are done for them in the county laboratory free of charge. Leaflets to expectant mothers are also supplied. A special effort began in May, 1926, to detect all cases of rickets at an early stage and bring them under treatment. With this object the visiting of infants has been extended to the end of the second year. At the end of April, 1927, light treatment was in operation at three of the centres. The 673 cases of crippling dealt with by the county orthopædic scheme included 39 cases of tuberculosis, 90 of infantile paralysis, 83 of rickets, and 67 of knock-knees (mostly old rickets). Some of the other cases dealt with were spastic paraplegia 27, congenital dislocation of the hip 25, club foot 37, claw foot 23, scoliosis 21, torticollis 10, and postural deformities, 147. There is plenty of water in the county as a whole, but there is much failure to distribute it properly among the many small areas responsible for providing their own water-supply. In some urban and many rural parishes the supply is very deficient. In other cases there is much waste of money by the duplication of reservoirs, pipes, &c. The number of new houses erected was 2190, compared with 1386 in 1925 and 973 in 1924. It is still impossible, however, to close many houses which are unfit for habitation and cannot reasonably be made fit. These number about 2000. Dr. Savage reports that meat inspection is becoming more efficient, and he expects much improvement in clean milk production from the Milk and Dairies Order of 1926. He has much to say, however, with regard to the inefficiency of the Tuberculosis Order, 1925, from the point of view of the public health. As it is being worked it is doing little more than to eliminate advanced cases of tuberculosis when they are ready for the knackers and when they have done their work in infecting the rest of the herd. Early cases of udder tuberculosis are not being notified and are only being detected by the following up of tuberculous milk samples. A whole-time veterinary surgeon should be appointed by the county council to carry out special inspection and to coördinate the work of the part-time veterinary inspectors. Such officer should be on the county health staff to "enable that preventive outlook to be given to the working of the Tuberculosis Order which is now so conspicuously lacking."

Stirling.

Dr. T. Adam gives full particulars of housing conditions of the three districts—central (population 27,500), eastern (population 40,692), and western (population 11,618)—into which the county landward (i.e., excluding the burghs) is divided. Each district is administered by a district committee. A survey was made in 1919 and an estimate of houses needed made, based on the closing of houses unfit for habitation and the raising of the general housing standard. With the latter object it was proposed to reduce the number of one-apartment and two-apartment houses. The first estimate was for over 4500 houses for the three districts. After consideration this estimate was reduced to 1140 and schemes were prepared and begun. Before the work was half completed the central government stopped it. In 1919 the building of houses by private enterprise had dwindled to

nothing. Since that date there has been a recovery, and the net result for the period 1919 to 1926 is 497 local authority houses and 548 private enterprise houses.

Dr. Adam points out that the inherent difficulties of building houses in bulk are always accentuated when the responsibility is shared by central and local authorities. The aim of the district committees is to close unfit houses with as little hardship as possible, and with this in view the medical officer of health reports such houses when they are vacant. There is, however, such a run on the low-class houses with the cheap rents that they become reoccupied before the local authority has time to close them, and in some cases these cheap houses attract to the district undesirable tenants from outside. Dr. Adam suggests that local authorities be empowered to make provisional closing orders which would become operative at the termination of a tenancy or at the discretion of the local authorities. He also suggests that the grants for the reconstruction of unfit houses made available by the Housing (Rural Workers) Act should be extended to urban housing. Owing to the coal stoppage there was a great increase in the expenditure on milk for necessitous mothers and children. The infant mortality-rate for Stirlingshire was the lowest on record. In the quinquennium 1891–95 the death-rate from all forms of tuberculosis was 2·07. In 1921–25 it was 0·86, and in 1926 it was the lowest on record, 0·64. It is hoped to establish light treatment at the Bannockburn and Camelon Hospitals to save sending patients into Edinburgh and Glasgow. In his comment on the proposed new county dairy by-laws, Dr. Adam thinks the model by-law requiring clean overalls for milkers, &c., should be retained and that it is a mistake in view of tuberculosis risks to lower the cubic space standard from 600 to 500 cubic feet in the case of new byres, and from 450 to 350 cubic feet in the case of existing byres. He further thinks that the Board of Health should give a definite lead with regard to cubic capacity, ventilation, and lighting of byres, seeing that this is not a local question.

The river Bonny has been so polluted of late years that fish could not live in it. Owing to the fact that the local distillery had ceased work and that the Banknock Colliery had been idle for seven weeks, the water improved so much that trout-fishing was resumed. In the three districts among 8092 cows 12 tuberculous udders and 10 cows emaciated by tuberculosis were found by veterinary inspection during the year. The meteorological records show that the rainfall at Falkirk was 38¼ inches, which is 3¼ inches more than in the previous year and 2 inches above the average. The falls recorded at two of the reservoirs were 66·6 and 61·7 inches respectively.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 3RD, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 366 (last week 233); scarlet fever, 2148; diphtheria, 1525; enteric fever, 89; pneumonia, 1301; puerperal fever, 38; puerperal pyrexia, 86; cerebro-spinal fever, 5; acute poliomyelitis, 12; acute polioencephalitis, 2; encephalitis lethargica, 34; dysentery, 19; ophthalmia neonatorum, 106. There was no case of cholera, plague, or typhus fever notified during the week.

Small-pox was notified from 13 counties, and the number of notifications, 366, is higher than for any week since April 2nd. Allocated to counties, the numbers were as follow: Derby 25, Durham 74, Gloucester 6, Lancaster 36, Lincoln 18, Northumberland 22, Nottingham 15, Warwick 3, Yorks North Riding 4, West Riding 50, Brecknock 8, Glamorgan 36, Monmouth 69. Of the 89 cases of enteric fever only 8 were notified from the county of Hertford.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox (it is now just three months since any death was attributed to this disease), 5 (1) from enteric fever, 48 (13) from measles, 7 (3) from scarlet fever, 12 (2) from whooping-cough, 43 (6) from diphtheria, 45 (13) from diarrhœa and enteritis under two years, and 63 (13) from influenza. The figures in parentheses are those for London itself. The deaths from enteric fever outside London occurred one each in Norwich, Bolton, Leeds, and Cardiff. The number of stillbirths registered during the week was 260 in the great towns, including 43 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. (D) H. J. Luck to be Surg. Lt.-Comdr. (D).
Surg. Lt.-Comdr. J. D. Murphy to be Surg. Comdr.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. C. Adderley is placed on the half-pay list on account of ill-health.
Maj. H. C. Sidgwick to be Lt.-Col.
Capt. G. D. Gripper to be Maj. (Prov.).

ARMY RESERVE OF OFFICERS.

Col. H. O. B. Browne-Mason, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt. P. M. Speed, from the Active List, to be Lt.

ROYAL AIR FORCE.

Flight Lt. C. P. Barber is promoted to the rank of Squadron Leader.

INDIAN MEDICAL SERVICE.

Temp. Lt. F. P. Lisboa-Pinto relinquishes his temp. commn.

COLONIAL MEDICAL SERVICES.

Transfers and Promotions: Maj. G. J. Keane, D.S.O., Deputy Director of Medical Services, to be Director of Medical and Sanitary Services, Uganda; Dr. P. P. Martyn, Assistant Medical Officer, British Honduras, to be Medical Officer, Nyasaland; Dr. L. U. Leembruggen and Dr. S. Subramaniam, Medical Officers, Grade I., Ceylon, to be Provincial Surgeons, Ceylon.—*Appointments:* Dr. H. M. Russell, Assistant Pathologist, Medical Department, Gold Coast; Dr. G. Shearer, Medical Officer, West African Medical Staff; Dr. L. R. Wynter, Medical Officer, Leeward Islands; Dr. R. J. Snodgrass, Medical Officer, Fiji; Dr. W. L. Blakemore, Medical Officer, Straits Settlements; Dr. A. L. Kiow, Resident Surgeon, Colonial Hospital, St. Vincent, Windward Islands; Dr. W. B. R. Jones, Assistant Colonial Surgeon, Falkland Islands; Capt. L. A. Celestin, Second Resident Surgeon, Civil Hospital, Port Louis, Mauritius; Dr. A. F. H. Stewart, Medical Officer, District 2 (North) St. Vincent, Windward Islands; Dr. J. W. Murdoch, Second Assistant Medical Superintendent, Central Mental Hospital, Federated Malay States; Dr. M. C. Cairney, Lady Medical Officer, Federated Malay States; and Dr. F. Widlake, Medical Officer, Gilbert and Ellice Islands Colony, Western Pacific.

DEATHS IN THE SERVICES.

Lieut.-Colonel R. B. B. Foster, I.M.S., who died in Dublin of pneumonia on Dec. 5th while home on leave, was the second son of the late Rev. Robert Foster, formerly Chaplain, Royal Hibernian Military School. He was educated at Trinity College, Dublin, where he obtained a Junior and School Exhibition, graduating M.B. in 1900. He entered the Indian Medical Service in the following year, was promoted Captain in 1904, Major in 1912, and Lieut.-Colonel in 1920. He served in the campaign in Somaliland, 1903–04 (medal and clasp); the late war, 1914–18, in Egypt and Mesopotamia (1914–15 Star, General Service and Victory Medals); and on the North-West Frontier of India, Afghanistan, 1919 (medal and clasp). He was only recently placed on the selected list of Lieut.-Colonels and was to have taken up the appointment of Civil Surgeon at Ootacamund on his return from leave. Amongst other appointments he had held was that of professor of hygiene and bacteriology in the Medical College, Madras. He married in 1921 Millicent Wyndham, only daughter of the late Henry Wyndham Ball, of Dublin, who survives him.

Special Articles.

CHILD DELINQUENCY.

BY E. A. HAMILTON-PEARSON, M.B., CH. B. ABERD.,

PHYSICIAN, TAVISTOCK CLINIC FOR FUNCTIONAL NERVE DISEASE, CHILDREN'S DEPARTMENT; CLINICAL PSYCHOLOGIST, WEST END HOSPITAL FOR NERVE DISEASE.

THE investigation of the causes of juvenile delinquency on which this article is based has been in progress for seven years. It was undertaken in no narrow psychological spirit, but with the object of exploring all factors, physical as well as psychological and environmental, which might conduce to delinquency; also to ascertain the efficacy of treatment, undertaken on the basis of the understanding of the underlying causal factors and directed to their elimination. The results achieved have been exceedingly good, especially in cases considered incorrigible because they did not yield to ordinary disciplinary methods. It is gratifying, and a testimony to the value of the results, that official centres, unofficially at present, are making increasing use of the work.

The material for the present article was derived from the written statement submitted in support of my evidence given before a Home Office committee set up to investigate the treatment of the young offender. For the purposes of that evidence a rough analysis of an unselected hundred of my own cases was undertaken. Sixty of the cases were delinquencies ranging in seriousness from suspected homicide to cases of uncurbed temper, the remaining 40 were ordinary neuroses.

Neurosis in childhood is treated understandingly because of its possible serious after-effects. Delinquency, although it is more prevalent and frequently has more serious results, is treated arbitrarily and with no attempt at understanding. Yet both states are equally non-adaptations to environmental requirements, but with different manifestations, and they frequently result from identical environments. An environment characterised by harsh unbending discipline may produce a psychological rabbit or a rebel against any form of authority, the difference in reaction being due to the difference in the type of the affected child. In one type the conflict resulting from non-adaptation remains unsolved, a collecting point for irresolutions, a neurosis. In another type the conflict is resolved in action which is at variance with accepted standards, a delinquency.

The delinquents fall into three main categories, the first two of which are differentiated on a basis of mental age, the third because of the existence of a definite physical causative factor: (1) mentally retarded delinquents; (2) delinquents with average or superior intelligence; (3) delinquents because of physical abnormality or disease.

The mental age must be estimated in every case as a routine of examination. Apart from the information gained from the tests, a knowledge of mental age is essential for the correct appreciation of conduct in retarded children. A child of 14 with a mental age of 11 is, for all practical purposes, in its thought processes and reactions to life, 11 years old. The actions of such a child can be correctly judged only from the standpoint of what could be considered normal for an average child of 11.

Mentally Retarded Delinquents.

Group 1.—Thirty-seven of the 60 cases belong to this group, a fairly normal proportion in my experience of the total of cases seen. Certain motives tend to show themselves so frequently as to become almost specific for the group. The most frequent are:—

(*a*) Realisation of inferiority, to which delinquency is a compensatory impulse.

CASE 1.—A boy, aged 16, physically healthy, mental age 12. Complaint: incorrigible stealing, beginning shortly after he commenced work. Investigation showed that he was ambitious to be on terms of equality and friendship with children of his own year-age and realised his inferiority to them, that an unusual popularity with his compeers corresponded with his thefts and that practically every penny was spent on other children. He learned that equality could be gained so long as he had money. The association of money with the satisfaction of his most intense desire led, in the absence of any counteracting inhibition, to his stealing without concealment.

This class of delinquency is the satisfaction of a psychological need, and the only means of preventing it from becoming habitual is to satisfy the need in a more legitimate way. Treatment must be based on the aptitude the majority of these children show for some form of manual training. The power to produce an objective thing, created by themselves, gives confidence and a feeling of capacity which, as a rule, overcome the previous method of satisfying the dominant desire.

(*b*) The continuance of a childish reaction to the environment beyond the age at which it could be condoned and not appear abnormal.

CASE 2.—A boy, aged 7¾, physically healthy, mental age 6. Complaint: incorrigible theft and ungovernable temper. School reported him as backward, docile, and honest. Investigation revealed his strong attachment to the father and intense jealousy of the mother. Any open act of affection between the parents drove the child into a frenzy of rage which culminated in an assault on the mother or theft from her. The boy never stole at any other time or from any other person. Such a reaction to jealousy is only understandable in the light of the child's mental age; it would not be abnormal at 6, but a child of 8, with its greater experience, should have a wider conception of its place in the scheme of family relationships.

It is necessary to study such children carefully and to adjust their environmental conditions in whatever way proves desirable for the production of a normal reaction.

(*c*) Openly stealing an object, because of desire for the object, without reference either to owner or consequences. Part of the educative experience of childhood is the formation of acquired inhibitions, abstract ideas of right and wrong conduct, based on experience and of sufficient power to inhibit any action contrary to the acquired and accepted standard. These inhibitions are usually approximately commensurate with mental age, and depend largely on the form of discipline the child has been exposed to.

CASE 3.—A boy, aged 8, physically overgrown, mental age of 6. Complaint: destructiveness and aimless impulsive stealing. Investigation showed a family history of insanity, a pronouncedly hysterical mother, and no evidence of any exercise of parental control. Open stealing of whatever his fancy dictated, from a bundle of firewood to a bicycle, showed a lack of acquired inhibitions, infantile for a mental age of 6, an exaggeration owing something to basic emotional instability, but mainly due to lack of home discipline.

In such cases the first essential is removal to an atmosphere of stable understanding discipline away from the home environment. After puberty sex constitutes a definite danger to patients in this category, with their underdeveloped powers of control. The girls tend to a careless promiscuity, the males provide the greatest number of assailants in cases of criminal assault.

Delinquents with Average or Superior Intelligence.

Group 2.—Twenty-three of the 60 cases belong to this group. In the majority a history of neurosis in one or both parents was elicited. Even mild degrees of parental neurosis may act as a causative factor in child neurosis and delinquency by causing uneven environmental conditions; they always call for serious consideration.

Ten of the 23 cases fall between the ages of 13 and 15. Puberty does not, as a rule, initiate abnormal states. The almost normal unbalance of this period of change acts chiefly by emphasising already existing abnormal traits, throwing them into fuller relief. It was possible, in most of these cases, to demonstrate the existence of milder degrees of abnormality some years before puberty.

In this group every case must be investigated separately and on its own merits. Underlying mechanisms have practically nothing in common; they are as various as the children and their environments. Quotation of the salient points of a few cases will amply demonstrate both the variability of mechanism and the fact that a permanent satisfactory behaviouristic result could be obtained only on the basis of an understanding of the mechanism activating the delinquency.

(*a*) Premeditated delinquency—i.e., delinquency, e.g., theft, undertaken with a full knowledge of the wrongfulness of the action and of the punishment involved by detection. A penalty incurred in this way must be exacted; at the same time the psychological factors involved in the execution of the delinquency should be taken into consideration. Many cases show the existence in the delinquent of a capacity for directed observation, an ability to plan on a basis of observed fact, and the initiative and confidence necessary to carry out a plan in the face of known risks—useful qualities to possess if life offers a field for their legitimate use, dangerous if that legitimate outlet does not exist. Sense of power and the excitement gained in outwitting an opponent are the primary activating desires; as a rule the value of the object to be stolen becomes primary at a much later stage.

CASE 4.—A girl, aged 17, physically healthy, intelligence above average. Complaint: a series of cunning thefts of trivial articles. Investigation revealed no previous delinquency. Circumstances drove her to a form of domestic service, the routine monotony of which gave no occupation for an active mind. At first the planning of thefts requiring ingenuity and daring gave exercise for her natural abilities; later, reality could be imparted to the planning only at the expense of the risk of executing the plan. She fully realised the dangers of her position, and that, in the inevitable next step, the value of the object must be a necessary ingredient of any plan to make it worth while as a stimulus. She eagerly welcomed the opportunity of farm training preparatory for emigration, proved an eager pupil, and has had no further trouble.

(*b*) Persistent delinquency, the result of a wrong attitude to certain environmental circumstances.

CASE 5.—A boy, aged 19½, physically healthy, intelligence average. Complaint: recurrent incorrigible delinquency, persisting through nine years, three of which had been spent in a reformatory. Investigation, corroborated by the parents, showed that he was an unwanted child and early resented the lack of affection and indifferent treatment he met with at their hands. The boy could not decide to cut free from people who had practically disowned him, but brooded over the unfairness of his position, deprived of an affection to which he felt he had a right. The boy's general attitude to the parents was, briefly, "if they won't own me then they shall regret having me." Unusual difficulty in his life created an emotional state, the culmination of which was some completely stupid delinquent action dictated by his attitude towards his parents—a boomerang form of revenge.

In such cases punishment will only tend to crystallise the wrong attitude; understanding of the reason for non-adaptation opens a way to complete readjustment.

(*c*) Outbursts of ungovernable temper with attempted assaults upon the parents, the result of inability to accept and adapt to the limitations of girlhood when these become apparent.

CASE 6.—A girl, aged 8, physically healthy, mentally above average. The parents feared that a recently developed ungovernable temper was early insanity. The father was head of a boy's preparatory school. Investigation showed that she had lived, dressed, and thought as a boy, had never regarded herself as other than a boy, and never had a girl friend. Her age made a more conventional life advisable, and this constituted a sudden call for complete change in her mode of thought about herself and her outlook on life which the child was unable to make. She despised girls with a small boy's lordliness. The unfairness of making her a girl when she wanted to be a boy, and her inability to accept or understand the situation, kept the child in a seething state of resentment. Every time the conflict was intensified by experience of the limitations imposed by the new conditions, relief came in a fit of passionate anger against the parents who for the first time had failed to make her life smooth for her.

Knowledge of the cause made it possible to help the child to solve her conflict completely and to adjust her education in such a way as to enable her to achieve a healthy attitude towards her own sex.

(*d*) Impulsive stealing of one particular form of article.

CASE 7.—A boy, aged 14, physically healthy but overgrown, intelligence average. Complaint: recurrent theft, persisting in spite of extremely severe corrective measures. Investigation showed that the stealing was of one type of article of female attire, that the garment was a necessary property for the act of masturbation, and that theft only occurred in the presence of strong masturbatory desire. It was a compulsive act as much beyond conscious control as the average spasmodic tic.

First to understand the relationship between the two acts and secondly to help the boy to masturbational mastery was the only way to ensure the cessation of the associated compulsive act of theft.

Delinquency because of Physical Abnormality or Disease.

Group 3.—Mentally these cases belong to the two previous groups; they are considered separately because in each a physical factor is present which conduces to delinquency. Active treatment of the abnormal physical condition is an essential preliminary to the correction of any psychological non-adaptation.

(*e*) Deficient secretion of an endocrine gland producing a condition conducive to delinquency.

CASE 8.—A boy, aged 9, of average mental age, reported to be physically healthy. Complaint: incorrigible theft, mainly of sweetstuffs or of money to buy them. Physical examination revealeda tendency to girdle obesity and retarded genital development. The first recorded theft was of half a tin of golden syrup and the large remains of an iced cake, consumed before breakfast without any ill-effect. Evidence of abnormal sugar hunger and an abnormal sugar tolerance which, with the other physical signs, pointed to posterior pituitary deficiency. A blood-sugar curve corroborated the case evidence of excessive tolerance. The physical condition improved rapidly under treatment with pituitary extract, and with the physical improvement the stealing ceased.

(*f*) Pituitary involvement, a sequela of encephalitis lethargica.

CASE 9.—A boy, aged 14, of average intelligence; encephalitis five years previously had left him somewhat emotionally unstable. Charged with having on several occasions committed unprovoked assaults. Examination showed him to be a case of dystrophia adiposogenitalis. Very sensitive about his appearance, a phobia was gradually forming in his mind that he was an object of derision to everyone who saw him. Anyone smiling as they passed him in the street was quite liable to be assaulted. Only amelioration of the physical state could make it possible to tackle the phobia. Treatment was begun, but after a short period he refused to attend and his case had to be abandoned.

(*g*) Recurrent bouts of violent temper and intractibility, a result of unsuspected physical abnormality.

CASE 10.—A boy, aged 18, intelligence average. Suspected of being mentally deficient because of periodic outbursts of ungovernable temper. Between bouts he behaved normally and worked well. Investigation showed that the bouts of temper coincided with periods of intense headache, bursting in character and localised to the centre of the cranial cavity. X ray photographs showed the sella turcica to be completely enclosed by a thin bone plate. In these conditions periodic fluctuation in gland size would account for the headache. Control of the outbursts of temper could be gained only through alleviation of the physical symptoms.

I hope enough has been said to make clear the advisability of, and the necessity for, an adequate examination of delinquent children by trained medical psychologists. In an article of this length it is impossible to do more than indicate a few of the facts which show the existence of such a necessity. The work constitutes one of the branches of preventive medicine, for which facilities can be gained only as a result of the pressure of an informed medical opinion.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Youthful Marriage Problem.

MUCH publicity has been given here to the marriage of the school-girl daughter of a successful publisher and a college student two years her senior. It is called "companionate marriage." This, we are assured, is not "trial marriage," for the expectation of success is not less than in any other marriage. It is not at all easy to find out in what ways this new marriage differs from the old. The most important would seem to be the youth and dependence of the bride and groom. The bride is to return to school after her honeymoon. Judge Ben Lindsey, who invented companionate marriage—the papers call it "pal marriage"—has had a large experience as judge of the juvenile court of Denver, which has convinced him that very many boys and girls at high school and college are at present enjoying the privileges of marriage without avowing their relations. This has two evil results: first, the encouragement of hypocrisy; and, second, the absence of responsibility in case of pregnancy. Early marriage with the consent of the parents is intended to avert these evils. For economic or other reasons it is assumed that no children will be desired for some years. This arouses interest in both medical and legal circles. Is birth control of any kind desirable in the early years of marriage? Does it tend to subsequent sterility? If desirable, what method of contraception should be recommended? In the meantime a 50-year old statute of the State of California is being tested for the first time; a carpenter is awaiting a jury trial for selling a pamphlet containing information on birth control. The American Civil Liberties Union is backing the defence, which must challenge the statute, since the sale of the pamphlet is admitted. The accused says, indeed, that it is only one of 25,000 that he has sold.

Nostrums and Quackery in the Air.

The absence of monopoly in American broadcasting stations has some advantages—e.g., in the variety of programmes to which one has access—and many disadvantages, not the least of which is the type of advertising to which one may be subjected. Each Wednesday evening, for example, one may hear from station KLZ a certain "Dr." Fisher recounting his latest successes in treating diseases of the eye, ear, nose and throat . . . "consultations free, examinations charged for." The Palmer School of Chiropractic owns a very large station, though it must be admitted that their programmes are free from any kind of advertising. Station KFKB is owned and operated by a quack, who specialises in "rejuvenation," and, alas, there are other stations which lend themselves to imposture of one kind or another.

Athletics and Tuberculosis.

The National Tuberculosis Association has announced its intention of investigating the relation of tuberculosis and competitive athletics. Sanatorium physicians have for long drawn attention to the large number of athletes among their patients, and now educational authorities are beginning to question whether competitive athletics are unduly conducive to active tuberculosis. Dr. Walter L. Rathbun has sent a report to the Association, after examining 1000 high school students in Chautauqua County, New York, in the course of which he says:—

> "A relatively large percentage of the active cases of tuberculosis were athletes engaged in the major sports. In one of the Dunkirk high schools three lettermen, the catcher of the Fredonia baseball team, and a member of the Jamestown junior high basket-ball team were found to have tuberculosis. The morbidity is relatively high, and I feel that any boy of high school age who indulges in heavy exercise should be not only examined physically but X rayed."

Prof. Bailey, of the University of California, would go further—he would abolish inter-school competition altogether. The only loss, he says, would be a financial one. At any rate, there is a good case for investigation.

Accident Prevention.

There were approximately 90,000 fatal accidents in the United States last year. Some 48,000, or more than half of these, occurred upon the streets or in public places, 23,000 in homes, and 19,000 in industry. In view of the heavy toll of life, its steady increase from year to year, and the certainty that much of the loss is avoidable, the Metropolitan Life Insurance Company conducted last year a demonstration in the City of Albany, N.Y., to show what can be accomplished by organisation and education in a single community. The first six months of organised effort gave a reduction of 31 per cent. in accidental deaths of all types, 71 per cent. in fatal accidents in the home, and 10 per cent. in non-fatal traffic accidents, as compared with the corresponding months in 1925. The main conclusions from this interesting experience are summarised in a pamphlet issued by the company in conjunction with the New York State Conference of Mayors, and entitled "Promoting Community Safety."

Women in Medicine.

The Woman's Medical College of Pennsylvania, the only medical college in the United States exclusively for women, is appealing for funds to build a new and modern home. It is said to be the oldest of its kind in the world, having been founded 76 years ago by two Quaker physicians. Its success has caused medical colleges, which formerly admitted only men, to open their doors to both sexes, and some 7000 women are now practising medicine in the States. The custom by which large firms establish medical departments and insist on regular examinations of employees has redounded to the advantage of medical women. The law in this country insists that when a medical man examines a woman professionally, there must be a woman nurse present, which means that the employer must pay for the services of two persons. His expenses are correspondingly lessened if the doctor is a woman.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Tropical Medicine Congress in Calcutta.

THE Congress of the Far Eastern Association of Tropical Medicine is now very near at hand, and the organising secretary, Colonel J. Cunningham, has arrived in Calcutta in order to coördinate the arrangements. Delegates numbering over 80 are arriving from 21 different countries. Each province in India is fully represented officially, and it is encouraging to see that over 1100 medical associates have intimated their intention to be present from all parts of the country. Names of renown in the medical world will be among our visitors: Hata from Japan and Shiga from Korea, Wu Lien Teh from China, d'Herelle from Egypt, Heiser and Vedder from America; Siam sends H.S.H. Prince Vallabhakara to head her delegates; the League of Nations is represented by Madsen and Gautier; the special guests of the Government of India are Sir Malcolm Watson, Prof. J. W. W. Stephens, and Sir Walter Fletcher. Liberal subscriptions to the funds of the Congress have been sent by the Maharajahs of Benares, Nepal, Burdwan and Jhalawar. The railways have played up splendidly; not only have concession fares and privileges been granted with a lavish hand, but three tours of interest have been arranged to afford opportunity of seeing the charm and mysticism of India.

Social Hygiene.

Last year's visit of the British Social Hygiene Council is slowly bearing fruit, in official circles at least. National consciousness to the seriousness of the scourge in India is slowly awakening. Interest up to the present has been centred around the sea-

ports, and an increasing amount of care is bestowed on seamen's welfare by the port authorities in Bombay, Calcutta, Madras, and Karachi. Happily the trustees of Indian ports have always taken a broad view of their responsibilities to those engaged in the maritime trade on which the prosperity of their ports depends, but until a Ministry of Public Health is formed in the Central Government, or even in Provincial Governments, there will needs be little coördination.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Liver Diet in Anæmia.

Prof. Jakob Pal, who made a tour of American medical centres some time ago, was struck by the favourable results obtained with the Minot-Murphy diet in pernicious anæmia, and has been using the method in his own clinic. He uses an extract of liver substance, for he finds that the patients refuse to take liver itself over a prolonged period, especially if they are in very poor health, and also because it is difficult to get fresh liver daily in sufficient quantities. He prefers a liquid of the consistency of syrup, a teaspoonful of which is equivalent to about 250 g. (8 oz.) of liver. The really active factor, Prof. Pal points out, is as yet unknown; some authors attribute the favourable effect to a vitamin, others to some stimulant effect on the metabolism of iron. The liquid extract which he uses contains 0·92 per cent. of iron, and his observations may be summarised as follows: (1) In several cases he produced an erythræmia, with an increase in blood pressure as in polycythæmia rubra hypertonica. This suggests that liver has a stimulant effect. (2) Various changes of the nervous system, of the nature of the polyneuritis so often noted in pernicious anæmia, have completely or partly disappeared. (3) Secondary anæmia, especially after serious hæmorrhage, as well as the typical chlorosis of adolescent girls (now rather a rare condition with us) responded to treatment in a most satisfactory way. The characteristic pink complexion which develops even before the number of erythrocytes reaches the normal level is due to the richer blood shining through the thin transparent subcutaneous tissues, and only fades when the layer of skin and subcutis becomes thicker.

Unsettled Conditions in the Medical Profession in Austria.

The increasing difficulties of life in this country are affecting the relations between doctors and their patients and between medical men themselves. The profession has been complaining of late of the iniquities of the so-called *Krankenkassa* (sick-clubs), which provide compulsory insurance for all wage-earners. Since 1888, when the law was introduced, the number of persons insured against illness has been steadily increasing, relatively as well as absolutely, and now nearly 75 per cent. of the population of large towns, especially Vienna, are in one way or another members of one of the numerous *Krankenkassa*, and entitled to free medical care. This is a result of the bourgeois becoming poorer; and the remaining 25 per cent. are also so badly off that they take care to call in the doctor only when it is absolutely necessary. The profession, therefore, has for some time been demanding that people earning more than a certain amount should be exempted from the benefits of the *Krankenkassa*. Modification of the existing system would require the passing of a special Act of Parliament, and the representatives of the profession have repeatedly urged the Government to bring in a Bill for the purpose. Four hundred Austrian shillings (£12) for the single, or six hundred shillings (£18) for the married is the monthly sum which the profession regards as a suitable limit of income, above which people should pay their own doctor's bill, except for major operations or prolonged stay in hospital or nursing home. This would mean that all the better paid clerks, persons employed in the civil or municipal services, bank clerks, cashiers, and even managers and directors of commercial enterprises, who have hitherto been entitled to free medical aid owing to their compulsory membership of the *Krankenkassa*, and who have mostly made use of the facilities afforded them, would again become private patients. The profession further demands that no new *Krankenkassa* shall be set up, and that all insured persons shall be entitled to choose their medical man from among a number of practitioners forming a panel for the sick-club. In other words, the present system of appointing doctors at a fixed salary for a certain district, to give medical assistance only to persons belonging to that area, should be done away with in favour of the "free choice of doctor" system. Payment would be made according to work done—i.e., each medical service would be paid for separately. These two postulates have given rise to serious differences of opinion amongst the members of the Medical Organisation of Vienna, which comprises all the 4000 doctors in the city. The group of sick-club doctors with fixed salaries, numbering about 1200, strongly oppose the idea of "free choice of doctor," not because their salaries and pensions would be in danger, but because their organisation has promised that "acquired rights shall not be touched." The conflict has assumed such proportions that the President, Dr. Stritzko, has resigned the position which he has held for ten years, and the 1200 members threaten to withdraw from the organisation. This would naturally weaken to a great extent the position of this body in their struggle with the Government, which is bound to come, as the profession is intent upon enforcing the income-limit for membership of the sick-clubs, especially for those establishments which exist for the officials and servants of the State and municipalities, which have already adopted free choice of doctor.

Blood Transfusion and Splenectomy.

At a meeting of the Vienna Medical College last month Prof. Jagic and Prof. Burghard Breitner discussed the problems connected with various forms of anæmia. Transfusion, they pointed out, is indicated in acute anæmia or oligæmia after severe loss of blood when it often has a favourable effect on the concomitant shock and also as a preliminary to serious operations—e.g., in cachectic persons. Good results are obtained in thrombopenia, agranulocytosis, and true hæmophilia. In leukæmia, especially of the acute variety, much good does not come from transfusion. In many pathological conditions of the blood the spleen has to be attacked as one of the chief hæmopoietic factors. It has been fully established that its removal does not have serious consequences. In the last statistical review of Tschurenkoff and Herfarth it is stated that extirpation of the spleen cures 83 per cent. of cases of hæmolytic jaundice, 80 per cent. of thrombopenia, 78 per cent. of Banti's disease, 25 per cent. of leukæmia, and 20 per cent. of pernicious anæmia. The method is the only one which promises good results in hæmolytic jaundice. It is indicated only in severe cases, in 176 of which it gave a mortality of 6 per cent. The result is believed to be permanent, and the effect is surprisingly rapid, a preventive transfusion being desirable. In pernicious anæmia the value of splenectomy is doubtful, the improvement generally being no more than temporary. The operation should not be performed at an early stage of the disease. The results in leukæmia are also doubtful, and lately deep irradiation with X rays has seemed to offer better prospects in this disease. In Banti's disease a combination of splenectomy with Talma's operation is often desirable, with preliminary transfusion. In the treatment of all these blood diseases coöperation between surgeon and physician is very necessary.

PROCEEDS OF A HOSPITAL CARNIVAL.—The carnival held in June last on behalf of the Coventry and Warwickshire Hospital produced nearly £27,000. This sum includes a donation of £15,000 from Mr. W. R. Morris.

Correspondence.

"Audi alteram partem."

DUODENAL ULCER IN THE FEMALE.

To the Editor of THE LANCET.

SIR,—In your last issue is a most interesting paper on this subject by my friend, Prof. Wilkie, in which he deals chiefly with what he terms "the cholecysto-duodenal syndrome." Though, as he says, "it is notorious that we only see what we look for," it may be allowed that Wilkie makes out a very good case for this syndrome, and he undoubtedly does a service in drawing attention to the symptom complex. I am not concerned, however, with this aspect of his paper, but my reason in writing to you is to draw attention to certain statistical points which he brings out, regarding (1) the relative frequency of gastric and duodenal ulcers in both sexes; and (2) the predominance of duodenal ulcers over gastric ulcers in both sexes. The figures he submits in each case are so closely in correspondence with figures of my own that I have thought it worthy of remark and of record.

My figures have been already submitted in two papers, the first published in your columns on April 7th, 1923, entitled a Statistical Inquiry into the Efficiency of Present-day Methods of Diagnosis of Ulcers of the Stomach and Duodenum, and into the Value of Gastro-jejunostomy in their Treatment, and the second, not yet published, delivered before the James Mackenzie Institute for Clinical Research about three weeks ago. The former of these papers dealt with two separate short series of cases. The latter paper was concerned with a more recent, somewhat larger series, purely of cases dealt with in my wards in the Western Infirmary, Glasgow. Wilkie's figures include, I understand, both hospital and private cases. The correspondence between his figures and mine is very striking, and, taken together, I think they may be taken as settling the proportions of these different ulcers in both sexes. Here they are.

Ratio of Gastric to Duodenal Ulcers.

Wilkie: 52 gastric ulcers, 310 duodenal ulcers ..	1 to 6
Young (three series combined): 30 gastric ulcers, 244 duodenal ulcers	1 to 8

Incidence of Gastric and Duodenal Ulcers in Both Sexes.

Wilkie: 22 gastric ulcers, 234 duodenal ulcers (Male sex.) ..	1 to 11 (approx.)
30 gastric ulcers, 76 duodenal ulcers (Female sex.)	1 to 2½
Young (last series): 10 gastric ulcers, 112 duodenal ulcers. (Male sex.)	1 to 11
8 gastric ulcers, 16 duodenal ulcers. (Female sex.)	1 to 2

In the light of these figures, it seems to me that it is justifiable to say that, in a case of gastric or duodenal ulcer, either chronic or perforated, and of doubtful location, the general as well as the sex incidence have a definite value in local diagnosis.

I am, Sir, yours faithfully,

ARCHIBALD YOUNG.

The University, Glasgow, Dec. 10th, 1927.

SURVIVAL AFTER OPERATION FOR BREAST CANCER.

To the Editor of THE LANCET.

SIR,—From the discussion at the Medical Society of London it appears that at the Cancer Hospital recurrence after the post-operative use of X rays has been "earlier and more rapid than in cases treated by surgery alone," and that no case has been cured by radium. Also at the West London Hospital no case has been "either improved or cured by X ray treatment." At the Middlesex Hospital may I say the results appear to be otherwise? Several primary cases have remained well with no signs of recurrence for three to five years after treatment by X rays or radium; in the post-operative group (mostly in Stage II. at operation) the three years' freedom from recurrence has been 47 per cent.—considerably more than percentages reported from the purely surgical treatment of similar groups of cases; and there has been a 22 per cent. three-year "cure" of major recurrent cases.

I believe these differences must be due in large part at least to different radiological techniques. If at the Cancer Hospital the very mild technique recommended by Dr. Robert Knox of applying the "first dose along the line of the scar unfiltered" ("Radio-therapeutics," 1918, p. 462) has been carried out, then there could not be easily devised a better method of testing clinically whether there is or is not a stimulating effect from X rays on any remaining cancer cells lying deeper than the skin! The Vienna school deny that there is clinically any stimulation dose of X rays, but Mr. W. E. Miles now brings forward apparently clinical evidence of its existence! May it not be, however, that the stimulation is a result of the operation? For I have seen seven or eight cases which showed rapid widespread recurrences locally within a few months after operation, to whom *no* radiation had been given, and these cases may be a clinical confirmation of the experimental finding that the best way to stimulate an animal tumour's growth is to cut into it. When surgery and radiation are both employed is it not indeed difficult to estimate the comparative value of each?

Contrariwise to the Cancer Hospital technique (? insufficient dosage) the so-called "Erlangen" method used at the West London Hospital not only has not been used at Erlangen in post-operative work, but (unless special glancing methods are used) intensive post-operative radiation in breast cases has actually been found in several clinics to increase the proportion of recurrences, owing to excessive general effects.

How important technique is, in radiological as in operative treatment, surely should not need to be emphasised; but too often in discussions the possible variations in X ray and radium methods appear to be forgotten in the estimation of results.

I hope soon to publish details of the observations and conclusions come to from over 500 cases of breast cancer, treated with X rays or radium, and already briefly reported at the Edinburgh meeting last July.—I am, Sir, yours faithfully,

J. H. DOUGLAS WEBSTER.

Chandos-street, Cavendish-square, W., Dec. 10th, 1927.

SIZE OF BRAIN AND MENTAL CAPACITY.

To the Editor of THE LANCET.

SIR,—Regarding Dr. Bernard Hollander's comments on the relation between the size of the brain and mental capacity, the following points may seem worthy of consideration. The evolution of the mammalian brain has essentially been an evolution of the cerebral cortex. This has involved a multiplication of cortical neurons; this, again, has led both to an increase in the thickness of the cortex and in the extent of its surface; and this increasing surface has necessitated a progressive increase in the size of the brain. Now a big head has certain disadvantages: not only does it involve an extra supply of nutriment, and an extra powerful skeleto-muscular apparatus to support it, but it further predisposes to injury. It being thus an advantage to limit, as far as possible, the size of the brain, the increasing extent of the cerebral cortex has led to its being involuted, a process which has enabled the surface of the cortex to be increased without increasing to a corresponding degree the surface of the cerebrum as represented by a cerebral cast.

During the evolution of the human brain from the anthropoid phase there has been, as it were, a continued attempt to limit, in the way indicated, the increasing bulk of the brain necessitated by the increasing superficies of the cortex. In some brains this has been more successful—i.e., the involutions are more numerous and deeper—than in others. It follows that the size of the brain is not an absolute index of cortical extent. This is a fairly accurate measure of cortical evolution; not, indeed, an

entirely accurate one, for, among other falsifying factors, the average thickness of the grey cortex is greater (and conceivably richer both as regards the number and the complexity of the neurons it contains) in some brains than in others. Hence the size of the brain is no certain index of the number (and complexity) of the neurons it contains. Broadly, the number of cortical neurons is a fairly accurate index of mental capacity, for their number has increased pari passu with the evolution of the vertebrate cerebrum; and here let me incidentally record the eloquent fact that among mammals neurons, including those of the cortex, do not multiply after birth, no matter how strenuously they are thereafter exercised either by education or otherwise. Does not this seem to dispose of the view that inheritance of somatic acquisitions has been a factor in the evolution of the mammalian cortex cerebri? Does it not seem definitely to prove that the increase in the number of cortical neurons, which has accompanied and been an essential part of that evolution, has taken place by the natural selection of individuals possessing a super-average number of cortical neurons?

Coming now to observed facts, it would appear that a distinctly small head more often goes along with sub-average intelligence than a distinctly large head goes along with super-average intelligence—that, while two out of three of the former class show sub-average intelligence, only one out of three of the latter class show super-average intelligence. If a very clever person has a very small head, we may be sure he has excellent cortical tissue, excellent intercortical connexions, a richly convoluted cortex, and deep cortical sulci. As a matter of fact, it is exceptional to find clever men with small heads. Beaconsfield, Gladstone, Salisbury, Rosebery, Campbell-Bannerman, Balfour, Asquith, Lloyd George—all big-headed men—rose successively to the highest position in the State. In their case large brain and large capacity manifestly went together.

Dr. Hollander referred to the emotional (as distinguished from the intellectual) aspect of mind, considered in its relation to size of brain. So far as concerns the cruder, more violent emotions, as displayed—e.g., in anger, fear, and the mating instinct—it is noteworthy that quite small masses of grey nervous tissue suffice to subserve them. One may witness all these emotions powerfully displayed by small birds with brains no bigger than a pea; and it is probably that our own strong emotions are similarly subserved by quite a small mass of grey tissue located in each of the thalami. The cortex cerebri pertains essentially to intellect.

I am, Sir, yours faithfully,

Harley-street, Dec. 10th, 1927. HARRY CAMPBELL.

THE TOXÆMIAS OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—My experience of medical cases and more especially mental derangement, which have arisen as a sequel to a toxic condition during pregnancy prompts me to ask the favour of your columns to refer to the interesting monograph on the above subject recently published by Drs. J. N. Cruickshank, J. Hewitt, and K. L. Couper, the research being conducted under the ægis of the Medical Research Council. My chief object is to ask a question and to make a suggestion. The question is prompted by the fact referred to in your leading article on the subject in your issue of Dec. 10th that the results of their instructive and elaborate research had been largely negative so far as any fresh light on the problem was concerned, the main conclusion arrived at by the authors being summarised as follows: "If the toxæmias of pregnancy have a common cause it is some form of intoxication by the break-down products of placental tissue." The possibility of an intestinal auto-intoxication being of ætiological importance is briefly referred to, but is not seriously regarded, but the open mind of the authors on the subject is shown by the statement that "the importance of this factor in the production of toxæmia in the view of the Dublin school is shown by their insistence on colonic lavage as a means of treatment."

The report is based on the results of "a full clinical examination and a study of certain aspects of the chemistry of the blood and urine." In my view the existence of any potential or actual auto-intoxication has to be determined by the examination of the centrifugal deposit obtained from a carefully collected specimen of urine, attention being directed to the presence of bacteria and cellular constituents, and to the careful examination of the stools or a washout of the bowel, reliance being placed on the sound use of the unaided senses. No information under either of these heads is given in the valuable record of 200 cases investigated. To those who attach importance to the rôle of auto-intoxication as a factor of great importance in the ætiology of many chronic and acute diseases, information as to the state of the urine and stools in the series of cases would be of the greatest interest. My general experience leads me to think that in any series of 200 cases of toxæmia in pregnancy the examination of the urine would reveal a marked degree of bacteriuria in at least 90 per cent. of the cases, and the examination of the intestinal contents as voided would reveal unmistakable evidence of a high degree of abnormal putrefaction in every case. I think it probable that it is along these lines that we will ultimately find the common cause, if such exists.

I am strengthened in this opinion by the facts of comparative medicine. It is very rare to find any clinical evidence of toxæmia in pregnancy in the lower animals. I recently asked a capable and thoughtful stock-owner and breeder of very wide experience the secret of his great success in the management of his stock. His answer was instructive: I watch the skin and the droppings of my animals. The suggestion that I wish to make is the desirability of a further series of observations being made, in which attention is directed specifically to the two lines of inquiry referred to. The results could hardly fail to be of great interest and value. This research would have the merit of being one that could be very simply and effectively carried out, no high degree of laboratory training being essential.

I am, Sir, yours faithfully,

Edinburgh, Dec. 10th. CHALMERS WATSON, M.D.

ALKALI TREATMENT IN FEVERS.

To the Editor of THE LANCET.

SIR,—Dr. B. A. Peters in THE LANCET of Dec. 10th (p. 1232) refers to work of mine on the prevention of scarlatinal nephritis by the administration of alkalies by mouth. He presents figures to show that at his hospital 4000 odd cases were treated with alkalies and that the incidence of nephritis in these was the same as, or even a little higher than, in a similar number of untreated cases. The alkalies, however, were only given during the acute stage of the fever, usually about a week. It is scarcely necessary to point out that nephritis rarely occurs before the tenth day of the disease, that is, at a time when the cases referred to by Dr. Peters were not having alkalies, the figures he gives therefore being without value in this connexion. In fact, they merely show that the incidence of this complication was practically the same in the periods 1910–17 and 1918–27.

Repeated estimations of the alkali reserve have been made at intervals throughout the course of the disease in a large number of cases, and these show that a condition of acidosis (depletion of the alkali reserve) persists in the majority of cases for many weeks. It is for this reason that I have advocated the giving of alkalies in the later stages when nephritis is likely to occur. It is also probably because of this continued acidosis that symptoms of alkalosis have never yet been met with in now approximately 1000 cases treated with alkalies in the doses suggested. Incidentally, similar observations have been made of the alkali reserve in cases of scarlet fever having

throughout a vegetarian diet and on others having a high sugar diet. These figures will be published in due course. Dr. Peters notes that there were four cases of nephritis in my alkaline series, one ending in death, but he does not mention that in three of these cases the alkali had been omitted 48 hours before the nephritis occurred, or that in the fatal case the kidneys at autopsy showed microscopical evidence of an antecedent chronic nephritis.

Finally, I would like to take the opportunity of pointing out that I have only suggested the use of alkalies in scarlet fever for the prevention of nephritis and not as treatment for the primary disease.

I am, Sir, yours faithfully,

London, Dec. 11th, 1927. A. A. OSMAN.

THE TUBERCLE OF THE FIFTH METATARSAL.

To the Editor of THE LANCET.

SIR,—I should like to congratulate Mr. A. G. R. Foulerton and Dr. G. F. Stebbing on their very interesting paper on Fractures of Metatarsal Bones by Indirect Violence, with special reference to Avulsion Fracture of the Tubercle of the Fifth Metatarsal (THE LANCET, Dec. 10th, p. 1225).

May I at the same time point out that while they quote Testut and Grüber as having met only three cases in which the tubercle of the fifth metatarsal was a separate bone, in reality a separate ossific centre for the styloid of the fifth metatarsal occurs quite commonly. In radiograms of 50 subjects between the ages of 10 and 17 I found a styloid epiphysis present in 14 (28 per cent.), and in a paper on the subject, recently sent to the *Journal of Bone and Joint Surgery*, while speculating on the occurrence of this epiphysis I suggested that it may represent a traction epiphysis produced by the tendon of the peroneus brevis or possibly the abductor of the fifth metatarsal (Wood's muscle) frequently present in man.—I am, Sir, yours faithfully,

LAMBERT ROGERS,
Surgical Unit, Welsh National School of Medicine,
Dec. 12th, 1927. Royal Infirmary, Cardiff.

STATUS OF MENTAL NURSES.

To the Editor of THE LANCET.

SIR,—You commented last week on the meeting of the Royal Medico-Psychological Association at which this subject was considered. My own view may be stated thus. In any attempt to assess the comparative merits of the examinations of the Royal Medico-Psychological Association and the General Nursing Council for Mental Nurses, the following points deserve consideration: 1. Registration should give every nurse a national qualification and status. 2. The preliminary examination should be the same for all branches of nursing, so that a nurse can qualify in more than one branch without undergoing a test in practical elementary nursing more than once. 3. The devising and management of examinations for nurses should be in the hands of the nursing profession. The certificate of the Royal Medico-Psychological Association provides none of these things.—I am, Sir, yours faithfully,

H. WOLSELEY LEWIS,
Medical Superintendent, Kent County Mental
Dec. 12th, 1927. Hospital, Maidstone.

MERCUROCHROME INTRAVENOUSLY.

To the Editor of THE LANCET.

SIR,—Mr. Martindale's warning, under this heading in THE LANCET last week, is warranted. In "New and Non-Official Remedies," a volume in which are entered products approved by the Council on Pharmacy and Chemistry of the American Medical Association (and accepted by them for inclusion) there will often be found precepts of practical value to British practitioners.

I am, Sir, yours faithfully,

M.D.

MEDICINE AND THE LAW.

DAMAGES AGAINST A SURGEON.

AFTER conflicting evidence, a verdict was given for the plaintiff in the case of Tyndall *v.* Alcock at Bristol Assizes in an action for damages for negligence brought against a surgeon. A girl of 8 years of age fell from a donkey in July, 1926, and fractured her left arm. She was then taken 10 miles in a motor-car to Gloucester where she was treated by Dr. Arnold Alcock, at first in a nursing-home and later in the Gloucester Royal Infirmary. The case for the plaintiff was that the arm became fixed at the elbow and, as the result of the development of Volkmann's contracture, movement was permanently impaired. Dr. H. Chitty, giving evidence for the plaintiff, said that he examined the patient in October, 1926, and found no voluntary movement of the wrist, fingers, and thumb; there was fixation and contracture such as usually arose from tight bandaging or splint pressure. Dr. Alcock, the defendant, gave evidence that at his first examination he found a fracture at the lower end of the humerus; the fragments were in a bad position, the elbow slightly swollen, and the ends of the bone injuring the tissues. He manipulated the bones into position and a screen examination showed the fragments in alignment; he was satisfied that the fracture had been properly reduced. The arm was then suspended from the shoulder and an X ray photograph obtained. He stated—though this was one of the facts in dispute—that he had from the first taken a serious view of the injury and had so informed the girl's mother. The upper bony fragment was almost through the skin and threatened severe damage to other structures. He gave instructions that the circulation should be carefully watched. Next day the hand was slightly swollen and the bandages were loosened. Four or five days later there was more discoloration. He realised that circulation was obstructed; the bandages were loosened and the strapping removed. Three or four days after the accident he suspected the possibility of Volkmann's contracture; by the third week of treatment he was sure of it. He knew the fracture was slightly over-reduced, but he thought this advisable since it involved less interference with the blood-vessels. Prof. Hey Groves, of Bristol, gave evidence for Dr. Alcock, as also did Dr. C. V. Knight (senior surgeon at the infirmary), the matron of the nursing-home, and a masseuse. Prof. Groves observed that the skiagram showed severe fracture of the lower end of the humerus with satisfactory reduction or over-reduction; if symptoms of Volkmann's contracture occurred, it was much more important to restore circulation than to restore alignment. He thought Dr. Alcock had adopted the proper course of treatment. Counsel for defendant submitted that Dr. Alcock had not omitted any necessary step; he had made radiological examinations in consultation with a skilled radiologist. The jury, after an absence of one and a half hours, returned a verdict that the defendant had not properly set the bone and had failed to treat the case properly afterwards. Mr. Justice Shearman refused to accept this, and, after a fresh retirement, the jury found a verdict for the plaintiff with £2000 damages and £150 for the mother. A stay of execution was granted on terms.

REDHILL HOSPITAL, EDGWARE. — Mr. Neville Chamberlain, the Minister of Health, last week opened the new Redhill Hospital, Edgware, which has been built by the Hendon Board of Guardians at a cost of £123,000. There are at present 175 beds, but the accommodation can be extended in the future to provide for 500. In his speech Mr. Chamberlain pointed out that in the county of Middlesex the voluntary hospital accommodation, in proportion to the population, is considerably below the average for the whole of London, or even for the country. The new institution is essentially for the treatment of acute medical and surgical cases.

Obituary.

JOHN PRIOR PURVIS, M.R.C.S. ENG.

WE have already briefly referred to the death of Dr. J. P. Purvis, which occurred at Greenwich on Nov. 18th, in his eighty-seventh year. He was the eldest son of the late Prior Purvis, M.D., of Blackheath, and was educated at Greenwich and at Blackheath Proprietary Schools. In 1859 he became a medical student on the *Dreadnought* hospital ship at Greenwich, afterwards proceeding to St. Thomas's Hospital, whence he graduated as L.S.A. and M.R.C.S. in 1863. For the next four years Dr. Purvis acted as house surgeon at the West Herts Infirmary at Hemel Hempstead, after which he began general practice at Greenwich as his father's partner. In 1869 he became medical officer to the Royal West Kent Dispensary (now the Miller General Hospital), and in 1885 he took up a similar appointment at the Greenwich Provident Dispensary, where he worked until his retirement two years ago. Like his father before him, Dr. Purvis was treasurer of the West Kent Medico-Chirurgical Society, having held that office since 1897. He was a keen Volunteer, serving as surgeon to the 2nd Volunteer Battalion of the Queen's Own Royal West Kent Regiment, and was granted the Volunteer decoration. For many years, also, he was a lecturer for the St. John Ambulance Brigade, and he was appointed an honorary associate of the Order of St. John of Jerusalem. A public vaccinator since 1870, he was still engaged in this work four days before he died.

Dr. Purvis married in 1868 the elder daughter of the late Mr. William Vaughan, of Blackheath. He is survived by two of his five sons, and by both his daughters.

ALEXANDER ROBB, M.D., D.P.H. ABERD.

Dr. Alexander Robb, who died on Nov. 25th at his home in Corstorphine, had been since 1909 medical officer of health for the counties of Midlothian, West Lothian, and Peebles. Born at Cruden in 1870, he was the son of Mr. Andrew Robb, and was educated at the University of Aberdeen. After graduating with honours in 1895, he spent a short time in private practice before being appointed assistant medical officer to the county of Lanark, a post which he held until 1901. In that year he became medical officer of health for Paisley, where he induced the council to establish a municipal laboratory, chiefly for bacteriological work. Since 1909 he had been continuously at work in the Lothians, for during the war his services were retained for administrative purposes, and he had to take over the supervision of extra districts to relieve other medical officers.

Dr. Robb married a daughter of the late Mr. David McLardie, and she survives with one daughter.

ROBERT DUNSTAN, M.R.C.S. ENG.

Dr. Robert Dunstan, who died on Nov. 27th in his eightieth year, was by birth a Cornishman and was for many years in practice at Plymouth and Paignton. Educated privately and at Wadham House, Liskeard, he started his medical career as assistant to a local practitioner but afterwards went to London as a student of Guy's Hospital, qualifying as L.S.A. in 1871 and M.R.C.S. in 1872. Among the appointments which he held at various times were those of medical officer to the Penzance rural, and the St. Ives urban, sanitary authorities, Admiralty surgeon under the Trinity Board, and medical officer in charge of troops at Paignton, where he settled in 1910. Much of his professional life, however, was spent in London and of late he had lived in retirement at Brighton. Dr. Dunstan was at one time a well-known amateur chess player.

He was a widower and leaves two sons and two daughters.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

MENTAL DEFICIENCY BILL.

AT the close of a late sitting of the House of Commons in the early hours of Tuesday morning, Dec. 13th, the Mental Deficiency Act, which had been amended in Standing Committee, was considered on report. The Bill could only be taken at that hour if unopposed, and some objection being taken from the Labour benches it seemed at first that there was some danger of the measure being lost owing to the congested state of Parliamentary business at this period of the session. The Labour opposition, however, was not persisted in. On Clause 1 (which defines defective persons) Mr. B. CROMPTON WOOD, who was in charge of the Bill, moved two amendments to para. (*d*) of the clause, which were agreed to without discussion. As a result of these amendments para. (*d*) now reads as follows: "Moral defectives, that is to say, persons in whose case there exists mental defectiveness coupled with strongly vicious or criminal propensities and who require care, supervision, and control for the protection of others." The Bill was then read the third time, without discussion.

HOUSE OF LORDS.

THURSDAY, DEC. 8TH.

LANDLORD AND TENANT (NO. 2) BILL.

THE House went into Committee on the Landlord and Tenant (No. 2) Bill, the Earl of KINTORE in the chair.

On Clause 16 (holdings to which Part I. of the Bill applies),

Viscount SUMNER moved to amend the proviso at the end of the clause relating to improvements to premises used for carrying on a profession. He said that it was rather anomalous that this part of the Bill gave a benefit to people who carried on a trade or business, but declared that for the purpose of improvements of premises in which that trade or business was carried on, premises in which a profession was carried on "shall be deemed to be premises used for carrying on a trade or business." The form in which this was expressed was rather a reflection on those who carried on a profession, but nobody quite knew what a profession was. Nevertheless, the provision had a practical object, and he would like it to be as clear as possible. He did not think anyone could define a profession for the purposes of the Bill; at any rate, the Bill did not attempt a definition. Whether it was a professor of deportment, a professor of dancing, a professor of music, or a professor of occult science was a thing which the tribunal would be faced with; but so far as he knew, the principal premises in which a person could be properly carrying on a profession otherwise than in offices were those which he proposed to mention at the end of the clause so as to clear the matter up. The proviso would then read:—

"Provided that so far as this part of this Act relates to improvements, premises used for carrying on the profession of a qualified physician, surgeon, solicitor, notary public or architect, shall be deemed to be premises used for carrying on a trade or business."

There was a practice by which in the country solicitors and notaries and architects carried on their profession, a genuine profession, in the house in which they lived, and of course, physicians and surgeons constantly did so. It appeared to him that if those persons, if duly qualified, were declared to be the professional men for whose protection this subsection was introduced, it would prevent claims and sometimes expensive and perhaps doubtful discussions before the tribunal as to the persons whom the clause was really intended to benefit.

Viscount BERTIE OF THAME: Can the noble viscount tell me why he has omitted dentists?

Viscount SUMNER: Because I did not think of it.

Viscount BURNHAM said he thought it would be very unwise to adopt a narrowing and restrictive amendment of this sort. *Expressio unius est exclusio alterius.* It meant that all these multifarious professions which had a genuine goodwill attaching to the premises in which the profession was carried on, and in which improvements were made for the purpose of carrying on the profession, would be left out of the Bill. In the East End of London there were many doctors who had consulting-rooms which were really in the nature of shop premises. At some time they had actually been shops, and had been added to and made more convenient for the practice of the profession. Dentists were in exactly the same category, and it would be most unwise, without further consideration, to state that some kinds of professions, or some professional callings, came under this heading by the adoption of words of this sort.

Once adopted these words would limit the right to compensation to the particular classes specified in the Bill.

Viscount SUMNER said that he accepted "dentist," but he entirely rejected "specialist."

Lord DANESFORT said that he agreed that the word "specialist" was a very vague one. There was no definition of it in the Bill, and it would be extremely undesirable that a man who wanted to claim compensation for improvements should have to go through an expensive law suit to see whether he was a specialist within the meaning of the Bill. He urged the Lord Chancellor to accept the amendment, and, if before the report stage there appeared to be any other legitimate professions which ought to be inserted in this clause, it would be possible to include them.

Lord JESSEL thought that it would be very difficult to limit the classes. In London they saw advertisements of dancing mistresses in the newspapers. That was a profession, and the improvement of their rooms was of great moment to them. How were they going to omit them if they admitted dentists? They had also left out veterinary surgeons. It would be better to leave it alone and not create another class of privileged person. People should be left to fight it out.

The LORD CHANCELLOR said that with great deference to Lord Sumner he thought it would be better not to try to insert a list of these professions. Already they had had suggested the dentist, the teacher of dancing, the veterinary surgeon, the bone-setter, the engineer, who had just as much right as the architect and the surveyor. If they went on thinking they would find other categories that ought to be added.

Viscount SUMNER said that it was obvious that he could not press the matter, but he said quite seriously that their lordships were deliberately opening a door to a large amount of ridiculous litigation by persons who were entitled to say that they were as good professional people as solicitors or architects or dentists. The whole sentiment of the Bill was in favour of the claimant, and they would find that persons were getting compensation for their improvements who were persons never contemplated by those who framed the Bill. He asked leave to withdraw the amendment.

The amendment was, by leave, withdrawn.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 7TH.

International Maternity Convention.

Mr. ROBERT YOUNG asked the Minister of Labour whether, now that the Government of the German Reich had ratified the International Labour Office Convention on maternity protection, he would expedite its ratification by His Majesty's Government.—Sir ARTHUR STEEL-MAITLAND replied: The general reason which led His Majesty's Government delegates at Washington in 1919 to abstain from voting for the adoption of the maternity convention, and which led successive governments to refuse to ratify, are that, in the British view, the benefits provided under the health insurance scheme and other social services already in operation in this country are in accordance with the policy of the convention and are, indeed, in some respects in advance of those embodied in the convention.

Mr. YOUNG: Is the right hon. gentleman not aware that the maternity mortality has not decreased in this country during the past 15 years, and is not that a reason for ratification of the convention?—Sir A. STEEL-MAITLAND: I will communicate the first part of the question to the Ministry of Health. As regards ratification of the convention this country has already in force a policy aiming at the same results and it was considered that the adoption of the specific proposals made in the convention would lead to serious administrative difficulties, and that the benefits which might be so conferred would be restricted to a more limited class.

Agriculturalists and Health Insurance.

Mr. DIXEY asked the Minister of Health whether he is aware of the fact that there was a general desire among agriculturalists to have a separate health insurance scheme for the industry; and, if so, would he consider the matter.—Sir KINGSLEY WOOD replied: The answer to the first question is in the negative. As regards the second, I may remind the hon. Member that under the present general scheme of National Health Insurance it is open to persons employed in agriculture to form approved societies of their own and thus to secure to themselves the full advantage of the contributions payable by and in respect of them. A number of such special agricultural and rural societies have, in fact, been formed and are administering the scheme with favourable results to their members.

Old Age Pensioners and Sickness Benefit.

Mr. CONNOLLY asked the Minister of Health whether an insured person who was in receipt of full sickness benefit under the National Health Insurance Act, on attaining the age of 65 years, or under the 1908 Act at 70 years, would be compelled to give up sickness benefit and apply for the old age pension.—Mr. CHAMBERLAIN replied: Up to the present time the position has been that an insured person's right to sickness or disablement benefit has ceased on his attaining the age of 70. Under a provision of the Widows', Orphans', and Old Age Contributory Pensions Act, 1925, the right to these benefits will cease at age 65 in all cases as from Jan. 2nd next, after which date old age pensions will be payable to persons aged between 65 and 70 who are duly qualified.

Complaints against a Public Vaccinator.

Mr. BROAD asked the Minister of Health whether he was aware that Dr. Pearson, medical officer to the Buckingham institution and public vaccinator for the Leckhampstead district of the Buckingham union, called on Mrs. Rodwell, of Chackmore, on Tuesday, Sept. 20th, and demanded that her five children, whose ages ranged from 19 years to 8 years, and who had been exempted by their father from vaccination, should be vaccinated, on account of two cases of small-pox that had been found at the Buckingham institution, situated a mile and a half away from Mrs. Rodwell's home; that Mrs. Rodwell told Dr. Pearson that the children would not be vaccinated on account of her husband's strong objection to the operation, the father being at the time kept in isolation at the institution; that Dr. Pearson threatened to have the post office, kept by Mrs. Rodwell, closed if she and the children were not vaccinated, and also to stop the boys from working unless they agreed to be vaccinated; that Mrs. Rodwell gave way and had herself and the children vaccinated in the unwarranted belief that Dr. Pearson had power to close the post office; whether he would point out to Dr. Pearson that in his capacity of public vaccinator his duty consisted in offering to vaccinate children who were neither exempted nor vaccinated, and that he had no right to threaten objectors to the operation; and what fee Dr. Pearson received for the vaccination of Mr. Rodwell's children and Mrs. Rodwell.—Mr. CHAMBERLAIN replied: I have made inquiries in regard to this matter, and am informed that the following are the facts: Dr. Pearson called on Mrs. Rodwell and offered to vaccinate her and her children because they had been in contact with her husband, who was employed at the Poor-law institute where cases of small-pox had occurred. An elder daughter, who had returned to the house for that purpose, expressed willingness to be vaccinated. Mrs. Rodwell at first demurred to the vaccination of herself and a younger child, and Dr. Pearson suggested that she should telephone to the institute and obtain Mr. Rodwell's permission. This she declined to do, but, on being informed by Dr. Pearson the her husband was being vaccinated, she consented to the vaccination of herself and the youngest child. Three other members of the family went to Dr. Pearson's surgery and were vaccinated. Dr. Pearson was not informed that declarations of conscientious objection had been made in respect of the children. He told Mrs. Rodwell that, having regard to the fact that she kept a post office, she should be vaccinated, as otherwise he felt it would be his duty to inform the authorities, but he denies having used any threats. There does not appear, therefore, to be any reason for taking the action suggested by the hon. Member. The doctor's fee for which the guardians are liable, for the vaccination of Mrs. Rodwell and her children, amounts to 22*s*.

Houses Built Since the War.

Mr. POTTS asked the Minister of Health the total number of recorded dwelling-houses actually built and tenanted for the years 1914 to 1926, inclusive, for England and Wales.—Sir KINGSLEY WOOD replied: The information desired by the hon. Member is not available, but the number of houses erected from the Armistice to March, 1927, was approximately 866,500.

THURSDAY, DEC. 8TH.

Reform of Penal Methods.

Sir JOHN POWER asked the Home Secretary whether he contemplated any changes in the penal methods applied to habitual criminals.—Sir W. JOYNSON-HICKS replied: The matter is always in my thoughts, but no change of importance can be made until after exhaustive inquiry.

Open-air Schools in Mining Areas.

Mr. BARKER asked the President of the Board of Education if he was prepared to issue to local education authorities a special instruction to take immediate steps to provide the necessary open-air school accommodation for the increasing number of children in the mining areas who, by reason of the distress prevailing, were suffering from latent tuberculosis, debility, and anæmia; and would he consider whether the emergency called for special organisation on behalf of the child sufferers from industrial depression.

—Lord EUSTACE PERCY replied: In regard to the general question of open-air schools, I would refer the hon. Member to the answer which I gave him on Feb. 17th last. I am inclined to doubt whether the effect of the industrial depression in mining areas on the health of the children has been as serious or as general as the hon. Member suggests, and whether any ill-health which does exist can be dealt with by the provision of open-air school accommodation, but I am taking steps to have a special inquiry made by one of the Board's medical officers into the whole situation in South Wales.

Position of the Voluntary Hospitals.

Mr. LUNN asked the Minister of Health what was the total number of beds provided in voluntary hospitals throughout the country on Dec. 31st, 1925, and what was the number to-day; what was the financial position of voluntary hospitals in the aggregate at the latest date of which he had information; and what powers had the Cave Committee to mitigate the financial difficulties of these hospitals.—Mr. CHAMBERLAIN replied: I have no official figures showing the position at the end of 1925, but the survey carried out by the Voluntary Hospitals Commission showed a total of 50,460 beds in voluntary hospitals in England and Wales at the end of June, 1924. On the best information at my disposal the corresponding figure at Dec. 31st, 1926, was 54,406 beds, or an increase in the interval of two and a half years of 3946 beds. As regards the second part of the question, according to the reports of King Edward's Hospital Fund and of the Red Cross Society, the London hospitals showed an aggregate deficit of £39,000 in 1926, and the rest of England and Wales showed an aggregate surplus of £286,000, the combined figures giving a net surplus of £247,000 for the whole of England and Wales. As regards the third part of the question, Lord Cave's Committee completed their inquiry six years ago. If the hon. Member is referring to the Voluntary Hospitals Commission, the answer is that the Commission have already distributed the full amount voted by Parliament, and they have no funds now at their disposal. The figures I have given are sufficient to show that the financial position of the voluntary hospitals generally has greatly improved since Lord Cave's Committee issued their report in 1921.

Preservatives in Dairy Produce.

Lieut.-Colonel RUGGLES-BRISE asked the Minister of Health the nature of the preservatives most commonly used in the imports into this country of dairy produce, especially as regards the following articles: butter, cheese, cream, liquid milk, and condensed milk.—Mr. CHAMBERLAIN replied: Preservatives are not now allowed in any dairy produce, whether imported or produced in this country, except butter and cream, and the prohibition will apply to these articles also on Jan. 1st next. I am informed that, when butter or cream contains preservatives, the substance used is usually a preparation of boric acid.

Cost of Inmates in Poor-law Institutions.

Mr. RITSON asked the Minister of Health whether he would state for the latest convenient date the average cost per head per week of persons maintained on indoor relief in Poor-law institutions; and the most frequent rate of charge per head per week for pauper inmates in county mental hospitals.—Mr. CHAMBERLAIN replied: The average weekly cost per head for the year ended March 31st, 1926, including the cost of buildings and loan charges, of the persons maintained in Poor-law institutions in England and Wales, was 27*s.* 8*d.* The rate of charge per head per week for pauper inmates in county mental hospitals would approximate to 22*s.* 6*d.*

Human Beings and Foot-and-Mouth Disease.

Dr. VERNON DAVIES asked the Minister of Health if he had any evidence of any cases of foot-and-mouth disease in human beings during recent years; and, if so, would he give details of such cases, showing the source of infection and the result of each case.—Mr. CHAMBERLAIN replied: So far as I am aware no case of foot-and-mouth disease in a human being has occurred in this country in recent years. The only two cases of suspected foot-and-mouth disease of which I have any record were investigated by a medical officer of my department and in neither case could any confirmation, either clinical or biological, be found to support the suggestion that the patient was suffering from this disease.

Health Conditions in Offices.

Lieut.-Colonel FREMANTLE asked the Minister of Health if, in view of the health conditions prevailing in many offices, he was satisfied that the inspection of offices at present carried on, and the powers of local sanitary authorities in London and elsewhere, were sufficient for the purpose.—Mr. CHAMBERLAIN replied: I have no evidence that the health conditions generally prevailing in offices are such as to call for special action. The present powers of local authorities in the matter have not been shown to be insufficient, but the measure of inspection at the present time cannot but be conditioned by financial circumstances.

Lieut.-Colonel FREMANTLE: Is it not a fact that health rates and sickness rates in offices are worse than among the general population and therefore justify inspection and inquiry?—Mr. CHAMBERLAIN: I have no evidence of that.

Lieut.-Colonel FREMANTLE: If I give the right hon. gentleman that evidence, will he look into it in conjunction with the Standing Joint Committee of the Metropolitan Boroughs, who have had this matter under consideration for a long time?—Mr. CHAMBERLAIN: I shall certainly be glad to consider any evidence which my hon. friend produces.

Death-rates from Tuberculosis.

Mr. HORE-BELISHA asked the Minister of Health what was the mortality during the last five years of persons suffering from tuberculosis.—Mr. CHAMBERLAIN replied: The crude death-rate in England and Wales from all forms of tuberculosis for the years 1922 to 1926 were, respectively, 1121, 1062, 1058, 1038, and 961 per 1,000,000 persons living.

Adulteration of Food.

Major AINSWORTH asked the Minister of Health whether, in view of the fact that in 1926–27 his department, in examining samples of liquid eggs, found that one-third of the quantity were either adulterated or not up to standard, and that in 1926 28,600 tons of this article were imported into this country of which 9533 tons might be proportionately regarded as equally unsatisfactory, he proposed to make further investigation to prevent the influx of such material which was not up to the proper standard of good human food.—Mr. CHAMBERLAIN replied: I understand that some, if not all, of the samples of liquid egg which were reported against by the public analysts in 1926 were regarded as adulterated by reason of the presence of an excessive amount of boric acid preservative. The complete prohibition under the Preservatives Regulations of the presence of any preservative in egg-yolk and articles prepared therefrom takes effect on Jan. 1st next, and as these regulations apply to importation as well as sale, it may be expected that further cases of such adulteration will not occur.

Diphtheria and the Schick Test.

Mr. DAY asked the Minister of Health whether the officials of his department had come to any decision for the purpose of recommending to the health authorities of England and Wales the Schick test and immunisation methods for the prevention of diphtheria; and what progress had been made.—Mr. CHAMBERLAIN replied: I am advised that this method of protection against diphtheria is one of proved utility. The evidence collected in regard to it has been made available to the local health authorities in reports from my department, notably in the last Annual Report of the Chief Medical Officer (1926, pp. 52–53), as well as in a Report on the Prevention of Diphtheria issued by the Medical Research Council during the present year (M.R.C. Report 115). The official memorandum issued by my department on this subject in 1922 is now being revised, and the new edition will re-indicate the action which it is open to local health authorities to take in the promotion and the use of this method of protection, and the assistance which they may obtain for this purpose from the Ministry of Health.

Road Fund Grants to Hospitals.

Mr. NAYLOR asked the Minister of Transport whether, in view of the pressure upon hospital accommodation and treatment caused by the number of motoring accidents, he would consider the desirability of obtaining power to make grants from the Road Fund for the purpose of enabling such hospitals to meet the extra costs so incurred.—Colonel W. ASHLEY replied: I do not think that contributions of the nature suggested by the hon. Member could properly be made from the Road Fund, in view of the purposes for which that Fund was instituted.

MONDAY, DEC. 12TH.

South American Meat and Foot-and-Mouth Disease.

Mr. CRAWFURD asked the Minister of Agriculture whether, seeing that the chief veterinary surgeon of the Ministry of Agriculture had been in South America since last April investigating the whole system of dealing with the export of beasts to this country, and that it was now proposed that the Parliamentary Secretary to the Ministry should now join him there, why it was necessary for the Parliamentary Secretary to go to South America instead of the chief veterinary surgeon being brought back to report; whether he could state the nature of the negotiations the Parliamentary Secretary was to conclude with the South American authorities; how long he would be absent; and what was the estimated cost of his visit.—Mr. GUINNESS replied: In March the Ministry asked three of the Governments of the

countries in South America which export meat to this country to accept certain proposals which were designed to prevent the introduction of the virus of foot-and-mouth disease into Great Britain. With the consent of these Governments, Mr. Frood, a senior veterinary inspector of the Ministry (not the chief veterinary officer) was sent to South America more fully to explain these proposals to the Governments concerned, and to collaborate with them in adapting them to local conditions. Mr. Frood has been given every facility to study the disease position, and reports that he has reason to believe that the Governments of the South American countries concerned will find a way to give effect to the Ministry's suggestions. The Parliamentary Secretary, who is going on a pleasure cruise to Rio de Janeiro, will extend his voyage to confer with representatives of the Argentine and Uruguayan Governments and Mr. Frood, in the hope of completing the negotiations in relation to measures for the control of animal diseases which these countries propose to adopt with a view to removing risk of transmission of foot-and-mouth disease to this country. He will be absent for about seven weeks altogether. The estimated cost to the Ministry is £50.

DR. VERNON DAVIES asked if any meat contaminated with foot-and-mouth disease had been brought in from South America at any time?—Mr. GUINNESS: We have no evidence of that.

Medical Officers of Health.

DR. VERNON DAVIES asked the Minister of Health the number of urban district authorities in England and Wales with full-time medical officers of health.—Sir KINGSLEY WOOD replied: There are 118 non-county boroughs and 182 urban districts in England and Wales with full-time medical officers of health.

Grants to Voluntary Hospitals.

Mr. THOMAS WILLIAMS asked the Minister of Health if he was aware of the great deficiency in the number of beds in the voluntary hospitals of Great Britain; that this deficiency was largely due to lack of funds; and would he consider the advisability of making grants towards capital expenditure in approved cases on the lines indicated in the Onslow Report.—Sir KINGSLEY WOOD (Parliamentary Secretary) to the Ministry of Health, replied: My right hon. friend is glad to say that the deficiency in beds reported by the Voluntary Hospitals Commission has been materially reduced since their survey in 1924. In view of the financial position of the country, my right hon. friend did not at that time feel justified in recommending a grant from public funds in aid of capital expenditure, and the progress made from purely voluntary sources since that date has been so encouraging that he sees no ground for considering the question again.

Imperial Research Grants.

Mr. ORMSBY-GORE (Under Secretary for the Colonies), in reply to Mr. BLUNDELL, stated that in making grants for scientific research the Empire Marketing Board aimed at supporting schemes which promised to benefit either the Empire as a whole or, at any rate, more than one part of it. An apportionment of expenditure must to a large extent be arbitrary in the field of scientific research and economic investigation. The principal grants made or approved by the Board during the first 18 months of its operation included: £50,000 to the Australian Government for the establishment in Northern Australia of a Tropical Research Station; £9000 to the Liverpool School of Tropical Medicine for research in metazoan immunity; £1500 to the Department of Scientific and Industrial Research for research into the preservation and transport of fish; and £1000 for the transport of Irish Free State butter; £20,000 to the Medical Research Council for research work at the Lister Institute on the vitamin content of fruit, vegetables, and dairy produce; and £6000 to the Rowett Research Institute, Aberdeen, for research into the physiological and pathological conditions associated with certain rationed and specialised diets, with special reference to Kenya native tribes.

Medical Tests of Civil Service Candidates.

Mr. HORE-BELISHA asked the Secretary to the Treasury whether it was the practice of the Civil Service for medical tests of candidates to be made subsequent to their passing examinations for Government appointments; and whether, seeing that a number of successful candidates, who had spent money and time in preparation for these examinations, were disqualified for selection owing to failure to pass the medical tests, he would consider the possibility of making arrangements for candidates to be medically examined before they embarked on their preparation for the educational examinations.—Mr. A. M. SAMUEL replied: It is not the practice of the Civil Service Commissioners to examine the physical qualifications of persons who apply for admission to Civil Service examinations. Their physical eligibility for appointment is investigated in the event of their success. The number of candidates unsuccessful at an examination is normally much greater than the number of those who are successful. The medical examination of all applicants would put the majority to unnecessary expense in payment of medical examiner's fees, and would involve an expensive and unprofitable addition to the work of the Civil Service Commission. The Commissioners issue a memorandum for the guidance of intending candidates, setting out physical qualifications of importance, and recommending intending candidates, who are in doubt as to their eligibility, to be examined by their own medical advisers before they begin preparation for a competition.

Definition of Miners' Nystagmus.

Sir RICHARD LUCE asked the Home Secretary whether any conclusion had yet been come to in the matter of establishing a more satisfactory definition of miners' nystagmus; and whether he was aware that the present definition was differently interpreted by different ophthalmic surgeons and made it difficult for the medical referees to give equitable decisions in many cases.—Sir W. JOYNSON-HICKS replied: I fully realise the unsatisfactoriness of the present position, but the matter is one of very considerable difficulty, and I have found it necessary to refer again to the Medical Research Council for further advice on certain points. I regret, therefore, it is not yet possible to come to a final decision.

TUESDAY, DEC. 13TH.

Infection from Discharged Sanatorium Patients.

Mr. HORE-BELISHA asked the Minister of Health whether his department had any scheme under consideration to prevent the spread of infection of tuberculosis by discharged sanatorium patients.—Sir KINGSLEY WOOD replied: It is the duty of the local medical officer of health under the Tuberculosis Regulations to take such steps as are necessary or desirable to prevent the spread of infection in every case of tuberculosis which is notified to him, and those patients who receive sanatorium treatment are instructed in the precautions necessary to avoid the risk of infecting other persons.

Mr. HORE-BELISHA asked if Sir Kingsley Wood was aware that it was customary for ex-sanatorium patients to be sent back in a very bad condition, and that they developed the disease again and spread it?—Sir KINGSLEY WOOD said that one could not dispose of the matter in that way. In a number of cases these unfortunate people returned home of their own desire, or sometimes at the request of their relatives. It was very difficult indeed to deal with such cases.

DR. VERNON DAVIES asked if Sir Kingsley Wood was satisfied that the local authorities were doing all in their power to deal with these cases.—Sir KINGSLEY WOOD: No, I am never satisfied in these matters.

After-care of Tuberculous Patients.

Mr. HORE-BELISHA asked the Minister of Health what percentage of tuberculous cases, discharged after treatment from sanatoria, died from tuberculosis within five years of their discharge, and whether his department had under consideration any schemes for the after-care of patients who had been treated in sanatoria for tuberculosis.—Sir KINGSLEY WOOD replied: My right hon. friend regrets that the information asked for in the first part of the question is not available. As regard the second part, local authorities are empowered under the Public Health (Tuberculosis) Act, 1921, to make arrangements for the after-care of persons who have suffered from tuberculosis, and many local authorities have made arrangements of this kind.

Mr. HORE-BELISHA asked if Sir Kingsley Wood was aware that his department did not appear to keep any of the really valuable statistics relating to this illness, and if he would take steps to see that more accurate information was collected so that it might be available.—Sir KINGSLEY WOOD replied that the hon. Member was under a misapprehension. He would be glad to show him the statistics the department had, and explain to him the many steps that they were taking in the matter.

HOSPITAL ASSESSMENTS.—Under the revaluation just completed in virtue of the new Rating and Valuation Act, the assessments to local rates of the Brighton Hospital have been greatly increased. That of the Royal Sussex County has been raised from £64 to £3375; of the Children's Hospital from £48 to £1144; of the Women's Hospital from £96 to £490; of the Throat and Ear Hospital from £28 to £450; of the Eye Hospital from £24 to £300. Hitherto hospitals have usually been arbitrarily assessed on a low scale, but the new Act is designed to secure all-round uniformity. The powers of the Minister of Health under the measure are, however, so extensive that it is believed to be within his competence to authorise the special assessment of hospitals and other charitable institutions.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Final Fellowship Examination, held from Nov. 17th to Dec. 1st, for which 114 candidates presented themselves, 38 candidates were approved. Six candidates, J. C. B. Allen (St. Bart.'s), J. T. Fathi (London), J. Gore (London), R. L. Holt (Manchester), H. J. Seddon (St. Bart.'s), and R. M. Walker (Univ. Coll.), although successful at the examination, are not eligible for their diploma on account of age. The following are the names and medical schools of the successful candidates:—

J. P. Ainslie, Melbourne and Guy's; F. C. Alton, St. Thomas's and Guy's; E. T. Bailey, Middlesex; B. Biggar, St. Bart.'s and Guy's; P. D. Braddon, Sydney and St. Bart.'s; W. H. Bremner, Otago and Guy's; R. Broomhead, Leeds and St. Bart.'s; R. K. Debenham, Cambridge and London; A. A. Digges la Touche, Cambridge and Leeds; S. W. Drinkwater, Manchester; A. S. El-Katib, Cairo and St. Thomas's; D. J. Evans, Birmingham and St. Bart.'s; A. W. Fawcett, Edinburgh, Sheffield, and Guy's; J. Fitzsimons, Otago and Guy's; F. N. Foster, Leeds and Guy's; E. A. Freeman, St. Bart.'s; A. T. Fripp, Oxford and Guy's; W. D. Galloway, Cambridge and Guy's; W. H. George, Cardiff and London; J. F. Hackwood, St.Thomas's; C. H. Hembrow, Melbourne and London; J. H. F. Jayasuriya, Ceylon and St. Bart.'s; B. G. Johnston, Adelaide and London; E. S. J. King, Melbourne and Middlesex; C. H. G. Macafee, Belfast; J. McFadzean, Glasgow and London; S. M. Milner, Cambridge, Manchester, and St. Bart.'s; E. D. Moir, St. Bart.'s; W. M. Robb, Edinburgh and St. Bart.'s; J. E. Schofield, Sheffield; N. A. Sprott, Oxford and St. Thomas's; and J. M. Weddell, Cambridge and St. Bart.'s.

Diplomas of Member were conferred upon the following:—

D. S. Davies, Oxford and Guy's; C. R. Greene, Oxford and Westminster; and Alison R. Kerridge, Royal Free.

Licences in Dental Surgery were conferred upon the following 46 candidates:—

S. C. Allen, T. J. Barnes, F. R. Bate, M. Bengis, M. G. Berry, V. G. Boyle, Josephine A. Bradley, D. C. Buckley, T. M. Calhaem, R. Catchpole, H. E. S. Collingwood, N. H. Cove, Mary P. Davies, F. W. K. Duncan, S. Edwards, G. A. Evans, E. H. Fenton, L. M. Garrett, A. J. K. Geere, J. W. Gilbert, H. Gordon, E. T. B. Graham-Scott, Tatiana P. Guercken, F. E. D. Hallon, L. J. Haworth, A. H. Herbert, H. Herzenberg, C. Himmelhoch, W. Holgate, G. K. Lacey, B. F. Mahony, C. F. L. Purslow, S. A. Quarterman, N. L. Salton, H. T. E. Sly, E. C. Smith, H. W. Spreadbury, C. N. Talmadge, G. G. Thwaits, C. A. E. Tomes, P. S. Turner, G. N. S. Weller, D. R. A. Wilcox, J. E. Willett, R. G. Woodward, and L. A. Wyborn.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Dec. 5th, the following were admitted (after examination) as Fellows: Andrew Naismith Fergus, Shaikh M. A. Faruki, and James Edwin Stanley Lee. The Macewen medal, presented to the Faculty by Mr. J. A. C. Macewen, in memory of his father, the late Sir William Macewen, was awarded to William C. McLaren, the most distinguished student in surgery of the year who had passed the examinations of the Scottish Conjoint Board, and who had obtained his clinical instruction in surgery in Glasgow.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—The following are the Council and office-bearers for the ensuing year:—President, Dr. Robert A. Fleming; Vice-president, Dr. George M. Robertson; Council, Dr. G. Lovell Gulland, Dr. Robert Thin, Dr. John Orr, Dr. William Fordyce, and Dr. Edwin Matthew; treasurer, Sir Norman Walker; secretary and registrar, Dr. George Gibson; honorary librarian, Dr. Robert Thin; curator of the laboratory, Sir Robert Philip; representative of the General Medical Council, Dr. William Russell: superintendent of the laboratory, Lieut.-Colonel McKendrick; librarian, Mr. T. H. Graham.

ENCEPHALITIS AFTER VACCINATION IN HOLLAND.—At the request of the Minister of Labour the President of the Dutch Public Health Council has formed a committee to investigate the occurrence of the nervous sequelæ of vaccination to which we again drew attention last week (THE LANCET, Dec. 10th, p. 1249). According to the *Nederlandsch Tijdschrift voor Geneeskunde* of Dec. 10th, the committee consists of Dr. N. M. Josephus Jitta (President), Prof. H. Aldershoff, Dr. J. P. Bijl, Prof. L. Booman, Dr. F. S. van Bouwdijk Bastiaanse, Dr. H. S. Frenkel, Prof. J. van Logbem, Dr. J. T. Terburgh, and Dr. A. J. Vitringa. Three subcommittees have been formed to discuss the following aspects of the question: (1) ætiology, pathology, and treatment; (2) epidemiology and organisation of prophylaxis; (3) the characters and varieties of vaccine lymph. The Public Health Council invites the Dutch medical profession to help the committee by supplying medical officers of health with full details of any cases occurring in their practice.

Dr. William Henry Davison has been appointed coroner for the City of Birmingham.

ROYAL SOCIETY OF MEDICINE.—The Society's house will be closed for Christmas from Friday, Dec. 23rd, to Tuesday, Dec. 27th, inclusive.

HOSPITAL SAVING ASSOCIATION.—Lord Cave, the Lord Chancellor, presided recently at the fifth annual general meeting of this Association, which was attended by some 2000 workers for the hospitals. There are now 351,000 members, an increase of 84,794 in the last 12 months, a number estimated at about 12 per cent. of the hospital population of Greater London. The total of wage-earners' contributions, based on a weekly payment of threepence per head, was £179,759, as against £128,762 in 1926. Payments for hospital services to members have risen from £83,926 last year to £127,196, and during the Association's year, which ended on July 31st, 99,754 contributors and their dependants were treated at voluntary hospitals. At the meeting speeches were made, among others, by "a business girl," a policeman, and a tramwayman.

EPSOMIAN CLUB DINNER.—The annual meeting and dinner of the Old Epsomian Club, which was held at the Trocadero, London, on Dec. 8th, was regarded as the club's jubilee, for it was the fiftieth meeting since Epsomians first dined together at the Cannon-street Hotel on July 13th, 1868, prior to the inauguration of the Propert Memorial Fund. The chair was taken by the new President of the club, Sir Cecil Armitage, lately Governor of Gambia and well known as an African explorer, who spoke of the wonderful opening for young medical men in West Africa. He related some of his adventures in the Colonial Medical Service, saying that the longer he remained in West Africa the more he became a sort of fetish to the natives. The headmaster, Mr. A. C. Powell, in responding to the toast "Floreat Epsomia," recounted the academic and athletic progress of the past year: 64 boys entered for the school certificate, of whom 59 obtained it, and he regarded the Rugby XV. as equal to that of any public school in the country. He remarked on the steady shift in the age-grouping of the school since the entrance age had been raised from 8 to 12 years. In 1922, out of 319 boys, 234 were of public-school age; this year, out of 389 boys, 329 are of public-school age; and by 1930 no doubt the number would have risen to 400. He was glad to welcome at the dinner their grand old man, Mr. Smith Pearce, a former headmaster, and from the present school the head prefect and the captain of football. Dr. H. F. Ealand proposed "The Guests" in a very humorous way, and Mr. Ormsby-Gore, M.P., Parliamentary Under Secretary for the Colonies, responded. He paid a high tribute to the medical men who go overseas and carry there the public school tradition. In Africa, he said, we badly want men trained in veterinary as in medical science. Progress languished because biologists and entomologists with the necessary knowledge could not be found, and he appealed for a generous allotment of time to biology in the school curriculum. Mr. G. E. Pinchard proposed "The President," who, in replying, mentioned the presence of the veteran Dr. Beckingsale, one of the first boys to enter the school.

CANCER RESEARCH IN IRELAND.—The Council of the National Cancer Campaign (Ireland) has issued a statement on its objects and scope. The Council is made up of representatives of universities, the Royal Colleges, and scientific societies, together with nominees of the Royal City of Dublin Hospital and of the joint committee of the British Red Cross Society and the Order of St. John. Its aim is twofold—research and education. It is hoped to collate and analyse the results of different forms of treatment carried out in the several hospitals of Ireland. At the same time attention will be paid to the study of causes, and clinical work in this connexion can be carried out at any hospital, members of whose staff are willing to collaborate with the workers of the campaign. The experimental part of the research will, in the first instance, be carried on at 14, Upper Baggot-street, Dublin, under the direction of an expert director, and under the supervision of a member of the Council who has accepted the post of honorary director. But, as funds permit, it is hoped to assist workers in other laboratories. As regards education, it is the intention of the Council to attempt to awaken the public as to the danger of cancer to the community, to convince them of the need of research, and to teach them, as far as is possible, how to recognise the first signs of the disease. The success attained by a similar campaign against tuberculosis some 20 years ago encourages those engaged in the present campaign. In conclusion, it should be made clear that the campaign is neither in constitution nor finance connected with any hospital. It rents rooms, however, from the Royal City of Dublin Hospital, and in virtue of this tenancy the governors of the hospital have a small representation on the Council of the campaign.

PANEL PATIENTS IN LIVERPOOL.—At the annual meeting of the Liverpool Insurance Committee held in Liverpool on Dec. 9th, it was stated that the insured population of Liverpool numbered 327,000, as compared with 232,000 in 1912, an increase of 41 per cent. Last year nearly £134,000 was paid to doctors in the city, the average number on doctors' lists being 1085. Prescriptions numbered over 1,250,000, costing £45,000.

A COAT OF ARMS FOR THE LONDON HOSPITAL.—Mr. W. J. Paulin, the treasurer, has defrayed the cost of a grant of arms for the hospital, and at last week's quarterly court it was reported that the grant had just been made by Herald's College. One of the charges on the shield consists of three silver feathers with golden quills, in allusion to the inaugural meeting in 1740 at the Feathers Tavern in Cheapside. The original home of the hospital was a house in Featherstone-street.

SIR DAVID DRUMMOND'S PORTRAIT.—On Dec. 1st, at Newcastle, Sir David Drummond was presented with his portrait in oils to commemorate the jubilee of his connexion with the College of Medicine of the University of Durham. Mr. R. G. E. Mortimer, chairman of the governors, who made the presentation, traced his career since 1876, when he was first appointed to lecture in therapeutics. After Prof. Thomas Beattie and Sir Robert Bolam had paid personal tributes to his work and teaching, Sir David Drummond invited the College to accept the portrait which is to be hung among those of others who have devoted their lives to the College. Sir Thomas Oliver gratefully accepted this gift saying that it would find an honoured place in the building. It is the work of Mr. R. G. Eaves.

MEDICO-LEGAL SOCIETY: ANNUAL DINNER.—The annual dinner was held at the Holborn Restaurant on Dec. 9th, Sir William Willcox, the President, in the chair. Earl Russell proposed the toast of Medicine and Law, which he described as the two greatest dangers of modern civilisation, and Colonel C. T. Samman, Warden of the Society of Apothecaries, and Sir Leonard Kershaw, Registrar of the Court of Criminal Appeal, responded. Mr. Justice McCardie proposed the health of the Medico-Legal Society, which was, he said, in its twenty-sixth year, and in the full tide of successful achievement. It would be deplorable if in the future there was any feeling of antagonism between the law and medicine. Two questions might lead to such antagonism, the first being that of insanity. He did not believe in a law which was unprogressive; he did not think that the social and scientific philosophy of 1927 was the same as the social and scientific philosophy of 1843. But when insanity was discussed certain broad features were sometimes overlooked. Writers in the press, for instance, always seemed to treat insanity from the point of view of murder, but the principle touched questions of theft, forgery, assault, and other lesser offences. The second question at issue concerned medical security, and here again he begged for a broad view. The doctor cried "Health! health! Let us break down the legal obstacles which prevent it." But there was another standpoint. He himself would say: "Truth! truth! Open the shutters and let in the light of truth"; for the principle of truth was fundamental to criminal justice, and justice, as had been said, was the great interest of man upon earth. The test of this matter must be the test of utility—what was the greatest good of the greatest number. If this test was applied the problems were not so easy as they seemed, and it was of great importance to understand the outlook of the other side. The traditions of a profession were perhaps greater than any other traditions, and the Medico-Legal Society was engaged not only in the search for truth, but in strengthening bonds between two professions with the same ideals of public good and the same tradition of public service. The President, after speaking of the invaluable work done by his predecessor, Lord Justice Atkin, who for seven years had presided over the Society, spoke of the various ways in which its meetings were useful. When called upon to give evidence, he said, the doctor should strive not to be an advocate, but an honest witness. Medical witnesses often appeared biased because they could not say what they liked, but had to answer questions. Although the practice of forensic medicine was limited in England, the people in this country were at the heart of a great empire, and he would like to see a central institute in England for the teaching and investigation of this branch of science. The President concluded by speaking of the valuable services of Sir Walter Schröder, Mr. Ernest Goddard, Sir Bernard Spilsbury, and others who held office in the Society. Dr. F. G. Crookshank wittily proposed the health of the guests, to which responses were made by Sir John Anderson, Permanent Under Secretary to the Home Office, and Mr. Herbert Carson, President of the Medical Society of London.

DISEASES OF THE NERVOUS SYSTEM.—A course of lectures on this subject will be given at the National Hospital, Queen-square, London, W.C., from Jan. 30th to March 23rd. Other courses will also be available at the hospital, and particulars may be had from the Dean.

DONATIONS AND BEQUESTS.—Mr. John Wallace Taylor, of Sunderland, bequeathed a considerable sum of money to charity, including £500 each to the Sunderland Royal Infirmary and the National Children's Home and Orphanage, £250 each to the Sunderland Children's Hospital, the Sunderland Orphan Asylum, and Dr. Barnardo's Homes.—Mr. James Gould, of Parkhurst, Brighton, who left £83,202, directed that after payment of certain annuities the reserve of his property, amounting to about £30,000, be divided between five institutions, including the South Wimbledon Cottage Hospital, North Wimbledon Cottage Hospital, and the Royal Sussex County Hospital.—Mr. George Holloway, of The Prospect, Aylestone Hill, Hereford, left, among other bequests, on the death of his wife, £500 to the Hereford General Hospital, £500 to the Freemason's Hospital, Fulham-road, £50 to the Hereford Eye Hospital, £50 to the Hereford Dispensary, and £50 to the Gwynne James Maternity Home.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Dec. 20th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. The Library will be open until 10 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Dec. 19th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, Dec. 21st.—4 P.M., Dr. Richard W. Gilmour: The Certification of Mental Patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 19th.—2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Dec. 20th.—3.15 P.M., Mr. W. B. Gabriel: Chronic Intestinal Obstruction.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 20th.—5 P.M., Dr. J. A. Drake: Urticaria.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Dec. 20th.—4 P.M., Prof. J. Marnoch: Some Pitfalls in the Diagnosis of Acute Abdominal Conditions. Discussion to be opened by Dr. J. Hunter P. Paton.

FRIDAY.—4 P.M., Case Reading and Discussion, in which all medical practitioners are invited to take part.

Appointments.

BOND, HILDA M. P., M.B., B.S. Lond., has been appointed Out-patient Medical Officer to the Royal Northern Hospital, Holloway.

CRICHTON, J. W., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Lydbrook District of the County of Gloucester.

KELMAN, J., M.B., Ch.B. St. And., Resident Medical Officer, Noranside Sanatorium, Forfar.

SMITH, H. G., M.D. Lond., D.P.H. Camb., Medical Officer of Health for Bournemouth.

SMYTH, M. J., B.Sc., M.Ch. N.U.I., F.R.C.S. Eng., Assistant Surgeon to the Hospital of St. John and St. Elizabeth, St. John's Wood.

Vacancies.

For further information refer to the advertisement columns.

Argyle and Bute District Memorial Hospital, Lochgilphead.—Asst. M.O. £300.

Barnsley, Beckett Hospital and Dispensary.—Sen. and Jun. H.S.'s. £220 and £140 respectively.

Bolton Infirmary and Dispensary.—H.S. £150.

Bootle Borough Hospital, Derby-road, near Liverpool.—Part-time M.O. £300 guineas.

Bootle County Borough.—Asst. Sch. M.O. £600.

Brighton, New Sussex Hospital for Women and Children.—Radiologist. £100.

Bury Infirmary.—Third H.S. At rate of £150.

Cardiff Royal Infirmary.—Hon. Surg. to Ear, Nose and Throat Department.

Chester Royal Infirmary.—Second Hon. Asst. P.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Derby, Derbyshire Royal Infirmary.—H.S. for Ear, Nose, and Throat Dept. £150.

Durham, Seaham Hall Sanatorium.—Med. Supt. £600.

East Sussex Administrative County.—County M.O.H. £1200.

Exeter, Wonford House Hospital.—Med. Supt.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.

Grocers' Company.—Research Scholarships. £300.

Harefield, Middlesex County Tuberculosis Sanatorium.—Third Asst. Res. M.O. £400.

Hull Royal Infirmary.—Res. House Governor. £500.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £100. Also Cas. O. £150.

King's College Hospital, Denmark Hill, S.E.—Sen. Med. Reg.

Liverpool, David Lewis Northern Hospital.—Hon. Radiologist.

Liverpool Education Committee.—X Ray Specialist. 3 guineas per session.

Liverpool, Hospital for Consumption and Diseases of Chest.—Hon. Phys.

Liverpool, Royal Southern Hospital.—Hon. Anæsthetist.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120. H.P. At rate of £100. Med. Reg. 40gns.

Miller General Hospital for South-East London, Greenwich-road, S.E.—H.S. £125.

Nigeria.—Four M.O.'s. for Tsetse-fly Investigation. Each £660.

Nottingham General Hospital.—H.S. At rate of £150.

Plymouth, South Devon and East Cornwall Hospital.—Res. Surg. O. At rate of £100. Also H.S. At rate of £50.

Preston, Biddulph Grange Orthopædic Hospital.—Sen. H.S. £250.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Anæsthetist.

Royal Army Medical Corps.—Limited number of Commissions.

Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Clin. Asst.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Asst.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.

Willesden General Hospital, Harlesden-road, N.W.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Hoylake (Cheshire) and at Cannock (Staffs.).

Births, Marriages, and Deaths.

MARRIAGES.

LISTER—CAREY TAYLOR.—On Dec. 8th, at Christ Church, Lancaster-gate, Arthur Reginald Lister, M.C., F.R.C.S., to Margaret Kathleen, eldest daughter of the Rev. and Mrs. Carey Taylor, of The Rectory, Winchelsea, Sussex.

TINCKER—BATES.—On Dec. 8th, at St. Mary's Church, Martlesham, Suffolk, Dr. R. W. Holden Tincker, of Painswick, Gloucester, to Kathleen Aldrich, eldest daughter of the late Rev. E. Bates, and of Mrs. Bates, of Martlesham Hall, Suffolk.

DEATHS.

JACKSON.—On Dec. 5th, in Paris, Marshall Jackson, W.A.M.S.

MARTIN.—At West Villa, Akenside-terrace, Jesmond, on the 8th inst., Ellen Renfree, wife of William Martin, M.D. Service at Jesmond Parish Church, Monday, Dec. 12th, at noon, and at Jesmond Old Cemetery immediately following.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

MEDICAL ASPECTS OF CONTRACEPTION.[1]

IN May, 1925, the National Council of Public Morals appointed a committee of 18 persons, for the most part doctors and divines, "to consider the ethical aspects of birth control from the view of Christian people." This committee drew up a report,[2] the main conclusions of which may with advantage be here set out.

The 1925 Mixed Committee's Conclusions.

1. "That for the Christian, spiritual reinforcements are available, where ordinary moral resources are insufficient; that such spiritual help can be relied upon by those united in Christian wedlock; and that the family is a Divine institution."

2. "The ideal method of birth control is self-control." "By this term we mean the complete abstinence from intercourse throughout those periods of marriage when, for one reason or another, conception is not desired." Referring to those who desire to keep their families within "workable limits," the report says of self-control: "Its feasibility in such cases—probably indeed in all cases—is, we believe, gravely underrated."

3. "The deliberate disconnexion by mechanical means of sexual satisfaction and its natural result opens the door to grave social perils, and a serious responsibility therefore lies upon the conscience of married people who adopt this practice." The grave "social evils" arise from the fact that "there is a close connexion which cannot be ignored between the problem of conception control and the problem raised by sexual promiscuity."

4. "Normally each couple should look forward to a family of four or five children at the least."

5. "The comparatively modern practice of conception control, and in particular the artificial methods used, call for a much fuller investigation than they have hitherto received from the medical, economic, and social point of view."

From the above conclusions it will be seen that the National Council of Public Morals is a body of a kind that is not disposed lightly to advocate birth control.

Shortly after the publication of the above report a medical committee was appointed by the National Council of Public Morals to report on the medical aspects of birth control. This book is that report. The medical committee consisted of 14 persons, of whom six had previously sat upon the committee which reported on the ethics of birth control. These were: Sir Arthur Newsholme and Mr. Charles Gibbs, Dr. C. J. Bond, Dr. A. K. Chalmers, Dr. Agnes Dunnet, and Dr. Letitia Fairfield. But Dr. Fairfield—who had signed a reservation to the ethical report to the effect that "We believe that the use of contraceptives is a frustration of God's design in nature and of the marital act, and as such is unjustifiable"—was unfortunately compelled to resign from the committee after six meetings owing to pressure of professional work.

Unlike certain other recent publications that have purported to expound medical views on contraception, this report contains much relevant and valuable evidence. In fact it is indisputably the most authoritative pronouncement upon the subject that has yet appeared. The committee has been at pains to collect statements and evidence from witnesses connected with four birth control centres with records of over 12,000 cases, from two American doctors who reported on the birth control movement in America and on the continent, and from Prof. F. A. Marshall, Mr. T. A. Webster, Lord Dawson of Penn, and Dr. Killick Millard, Dr. R. A. Gibbons, Dr. Binnie Dunlop, and Dr. Crichton Miller. The committee's conclusions are embodied in a report of 14 pages, which constitutes the first part of the book. The second and much longer part consists of the various statements and evidence submitted to the committee. We indicate here the chief medical conclusions which have been reached by the committee.

The Medical Committee's Conclusions.

1. "In the close relationship of married life, the effects of continued abstinence may be grave for persons of certain temperaments. Abstinence, while it is the obvious, and, from the ethical point of view, the ideal procedure, when it is desired that no children should be born, is impracticable for the majority of young married people."

The divergence of view as to the practicability of abstinence between this statement and that embodied in the ethical report illustrates the difference between the

[1] Medical Aspects of Contraception. By a medical committee. London: Martin Hopkinson and Co., Ltd. 1927. Pp. 183. 10s. 6d.

[2] The Ethics of Birth Control. Macmillan and Co., Ltd. 1925.

theological and the medical approach to the question of abstinence.

2. "Coitus interruptus is practised by a very large number. The principal objection is that incomplete gratification sometimes produces well-authenticated psychological illnesses in both participants, as well as pain, tenderness, irritability of temper, hysteria, and impotence."

3. "There is strictly no safe period, as conception may occur at any stage of the menstrual cycle. Experience shows, however, that there is a time in which the chances of conception are materially diminished—namely, from about the eighteenth day after the first day of the preceding period to the end of the cycle." It is to be noted that this view seriously conflicts with that of the ethical committee which expressed itself to the effect that: ". . . there is a large body of evidence that, as an alternative to complete abstinence over long periods, strict limitation of sexual relations to *four or five days* in the middle of the intermenstrual period, does diminish the risk of pregnancy." The large body of evidence was not specified. But whatever it was, it militates in the most unequivocal manner with the evidence presented to this committee by Prof. Marshall.

This evidence is based on the assumption that the human ovum and spermatozoon remain capable of fertilisation for similar lengths of time to those of the rabbit—namely, 4 and 30 hours respectively after discharge—and upon evidence that the usual moment for ovulation in the woman is from the fourteenth to the seventeenth day after the beginning of the menstrual discharge. This evidence, which is forthcoming from the observations of Dr. Wilfred Shaw, is of very great importance since, if true, it follows that the mid-menstrual period is the one in which the chances of fertilisation are incomparably greatest. Far from being a "safe" period, as taught by the Roman Catholic Church,[a] the mid-menstrual period would, par excellence, be the unsafe period.

4. In the opinion of the committee the best contraceptive method for women free from genital disease is a combination of a rubber occlusive diaphragm and a spermicide in a non-fatty vehicle which should be applied above and below the diaphragm. But to this view the important reservation is made that "it requires a medical practitioner to fit the appropriate size and to teach the woman to place it in position herself."

5. With regard to the effects of contraception on individual health, the report says: "With regard to the woman, evidence brought before us suggests that in cases in which, on medical grounds or on account of already large families, contraceptives are advisable, their use brings about an improvement in general health owing to freedom from anxiety as to the possibility of pregnancy, increased happiness in the home, better outlook, and greater affection for the children."

6. Referring to how women can best be given advice on contraception, it is stated that: "Hospitals should be centres for advice and instruction on the subject. When a hospital has an obstetric and gynæcological department, this would be the most suitable place."

7. "The amount of scientific information as to the efficiency of contraceptives based on statistical data is very small. On this subject exact information could only be based on the collection of scientific data extending over a period of years."

This report should be read by all interested in the subject. It can safely be recommended as the best-grounded presentation of the medical aspects of birth control that has yet been made.

Those who are anxious to assist this committee in the process of investigation which it feels to be so necessary, can best do so by collaborating with a Birth Control Investigations Committee, the aims of which were explained in a letter from Sir Humphry Rolleston which appeared in our issue of Oct. 29th. The secretary of this committee is the Hon. Mrs. Marjorie Farrer, 41B, Clanricarde-gardens, London, W. 2, who will welcome communications from members of the medical profession.

[a] "When all other deterrents fail, it is lawful, according to the teaching of the Church, for married people to limit intercourse to the mid-menstrual period, when, although conception may occur, it is less likely to occur than at other times" (Birth Control. By Halliday Sutherland. Harding and Co. P. 153).

MARSHALL'S LYSOL.

THIS preparation is manufactured by Lysol, Ltd., Raynes Park, S.W. 20, to the original formula of Schulke and Mayr, A.G., Hamburg, and is now to be known by the registered trade mark "Marshol." Medical men are asked to specify Marshol on their prescriptions instead of just Lysol. Schulke and Mayr, A.G., Hamburg, is an associated company of Lysol, Ltd., and Marshol will continue to identify the original Lysol well known for over 30 years.

A SPANISH MEDICAL DIRECTORY.

THERE are many signs of a revival of scientific medicine in Spain. We have lately received a large volume of 1432 pages entitled "Anuario Médico de España," published with distinguished collaboration under the editorship of Señor Federico Bonet, pharmacist, in Madrid (Av. Conde Peñalver, 21 y 23). This is the first issue of a new directory containing lists of medical men, dentists, veterinary surgeons, chemists, colleges, faculties and schools, hospitals, clinics, sanatoriums, laboratories, a summary of Spanish legislation concerning medicine, and notes on medical history. Particularly interesting is a long alphabetical list of pharmaceutical proprietary specialties registered in Spain, with the date and number of the registration, and sometimes with the names slightly altered and unfamiliar. It is inevitable that there should be a few errors in a new work of this magnitude, but the undertaking deserves every praise as it will serve a most useful purpose in Spain and throughout the world generally.

DIPLOMAS IN MEDICAL RADIOLOGY AND ELECTROLOGY.

IN our recent Students' Guide no mention appeared of the Diploma in Medical Radiology and Electrology granted by the University of Liverpool. Candidates before admission to the examination for this diploma must possess a registrable qualification, approved by the University in medicine and surgery, and must have attended courses of instruction in (*a*) physics (two terms), (*b*) (i) radiology, and (ii) electrology during six months in the X ray and electrotherapeutic departments of a hospital or hospitals. An examination is held in March each year, the subjects being (*a*) physics, (*b*) radiology and electrology. Examination in either part may be taken separately. Fees: tuition, £24 5*s*; examination and diploma, £6 5*s*. These courses commence during the first week in October. Application should be made to the Dean, Faculty of Medicine, the University of Liverpool.

SCOTT'S PATENT MALT CHARCOAL BISCUITS.

WE have received from Messrs. R. M. Scott, of Ipswich, manufacturers of wholemeal biscuits, a sample of their Malt Charcoal Biscuits which, in flavour, resemble a reasonably sweet biscuit, while there is an entire absence of grittiness. The biscuits should prove useful in gastric conditions where indicated; they are conveniently packed in tin boxes, thus conserving their natural crispness. They are intended to be eaten after meals.

A QUESTION OF SUPERANNUATION.

Dr. J. T. Macnamara, medical officer and vaccinator of the Ladywell Institution, Lewisham, has addressed a letter to the Ministry of Health asking for a public inquiry into the administration of all the institutions controlled by the Bermondsey Board of Guardians. He bases his demands upon a contention that his own office has been constituted legally as an appointment for life, so that any resolutions determining the appointments of all over 65 years of age are illegal as far as he is concerned. In particular reference to his own institution, he points out that a surprise visit from a representative of the Ministry of Health revealed a very satisfactory state of affairs, and he submits that the replacing of a whole-time medical officer will be uneconomical and not in the interests of the public service, referring, presumably, to what he believes to be an intention of his Board.

SPLENDID ISOLATION.

To the Editor of THE LANCET.

SIR,—There are two country practices which are almost accurately separated by a main road for two miles of its length, each doctor living four miles from the boundary. These two practices have been worked side by side, under the same board of guardians, by the same two men, for over 30 years, and last year each of them told me that, so far as he knew, he had never seen the other. Is this a record? I am, Sir, yours faithfully,

Clevedon, Dec. 9th, 1927. R. L. WASON.

"MULTIWIDTH" PLASTER.

IN order to overcome the inconvenience of carrying several spools of adhesive plaster in a medical equipment case, and the trouble of cutting a wide strip into narrow widths, Messrs. Fassett and Johnson, Ltd., of 86, Clerkenwell-road, London, E.C., have devised a single spool measuring 3 in. in width which carries Mead's rubber adhesive plaster or Seabury's oxide of zinc plaster cut into widths of ½, ¼, ¾, and 1½ in. Any of these widths can be rolled off the spool as required without disturbing the others. Each spool contains 5 yards, so that the total area of plaster contained on a spool is 3 in. by 5 yd. The saving of space as well as convenience of handling are features of this new plaster packing.